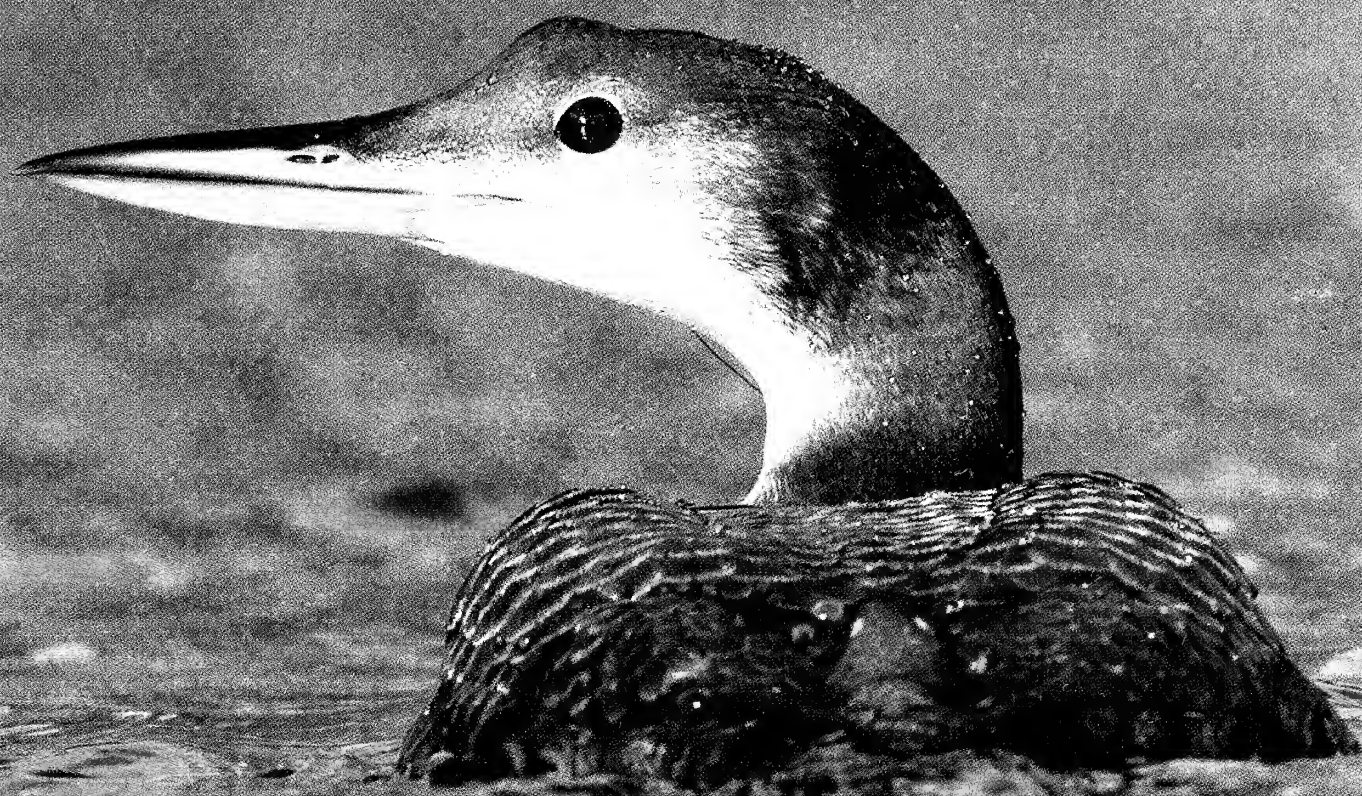




# British Birds

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Breeding Honey-buzzards in Britain

Stejneger's Stonechat





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# British Birds

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Birdwatchers who focus on a single species, or a small group of related species, and devote their spare time accordingly are perhaps increasingly uncommon, or so it seems to me. Most of us, me included, are happy enough to spend our leisure birding time in a more generalist way, working a local patch, looking for something unusual or unexpected, and/or contributing to general surveys of breeding or wintering birds such as BBS or WeBS.

The Honey-buzzard paper in this issue is one of those single-species studies that are submitted to *BB* every now and again, and never fail to impress when you look closely at the effort involved. *How* many hours?! Quite often, these papers represent a large chunk of a lifetime of endeavour, and I always feel bad if the work has to be substantially pruned to fit into the parameters of a 'standard' *BB* paper. The authors involved in this particular study have been especially forgiving as I whittled their initial manuscript down by almost half, and yet the breadth and depth of the results in this summary are still hugely impressive – all the more so considering that their quarry is a secretive and still scarce breeder in Britain.

*Roger Riddington*



**British Birds aims to:** ❖ provide an up-to-date magazine for everyone interested in the birds of the Western Palearctic; ❖ publish a range of material on behaviour, conservation, distribution, ecology, identification, movements, status and taxonomy as well as the latest ornithological news and book reviews; ❖ maintain its position as the journal of record; and ❖ interpret scientific research on birds in an easily accessible way.



## Where next with county avifaunas?

‘Yet another county avifauna!’ This tweet from earlier in the year was not from a cash-strapped birder but from a bookseller. Not what you might have expected from someone earning a living from selling books. Does it say something about where we have got to – or more importantly where we should be going – with such works?

When I started birdwatching, in the long-distant past, there were already many county avifaunas available, although most had been published years before and were limited to a narrative account of each species – and many counties did not even have one. However, unless you were fortunate enough to have a local county bird club that produced a bird report, those early county avifaunas were the only source of information on what species occurred in your area, and where and when you might find them. The source of information was invariably limited to the personal correspondents of the author and, understandably, a high proportion of the records referred to birds shot.

Then, in 1954, Eric Gillham and Dick Homes wrote *The Birds of the North Kent Marshes*, which broke completely new ground. It described in some detail the physical environment of the area and put the birds into the context of where they lived. It was also based on extensive field observations by the authors as well as their correspondents. That model has, until recently, remained essentially unchanged, although the introductory chapters now often include a range of other topics, such as the history of birding in the county concerned and of the contribution of leading observers. The source information has also increased greatly with many county or regional bird clubs producing comprehensive annual reports, based on ever-expanding databases.

Are we now on the cusp of another big step-change? Has the publication of *Bird Atlas 2007–11*, and the recent appearance online (on MapStore) of all the maps included in each of the BTO’s published atlases, signalled a sea-change in the

approach to recording our birdlife? In recent months, a clutch of new publications has appeared that draws on the data collected for *Bird Atlas 2007–11*. Some are simply atlases, of which a number are published only online, while others are complete avifaunas incorporating the atlas work. But there are other developments too, in terms of gathering the data which are the raw material of all avifaunas. Apart from the now well-established bird information sites, there are a plethora of other information sources on the web, although many of these are transitory and it is difficult to capture the information in a consistent and comprehensive manner. Many are also focused primarily on rarities. Quite different is BirdTrack, developed by the BTO and its partners, which can be used to collect data on all species, anywhere in the country. This is an extremely powerful tool, not least because once the data are collected and uploaded they are secure and available for consultation and analysis. Such volumes of data demand, or at least justify, sophisticated analyses.

While the availability of data-handling skills is increasing rapidly, managing such a volume of information currently presents a major challenge to county organisations if they are to make the best use of that information and present it in an appealing and relevant manner. Some counties are taking significant steps forward, in one case publishing (very cheaply) a disc of all the maps that were subsequently included in the (much more expensive) county avifauna. Is the next logical step the regular updating of the county maps as each year’s records are received and verified, and making those maps available online? That might be a logical next step, but it raises all sorts of questions about resources, most importantly the difficulty of achieving full coverage on a continuing basis. There are also obvious questions about technologies and the content of maps, and so on. In fact the more you think about it, the more issues you identify that need to be resolved. And even if, or perhaps when, they are



resolved, does it make any sense for each county to plough its own furrow? Plainly not. It would be both impracticable and a waste of resources for each county to develop its own protocols, which inevitably would differ to some degree from county to county. Does the BTO have a role to play here in helping to develop templates that can be used by individual societies?

Atlases are only one tool for presenting information. Published avifaunas deal with each species' history and current status in the county and for some species individual records are often cited. Production of such a work nowadays requires a group of dedicated people and a period of several years of hard and well-organised effort. Upon publication, everyone involved heaves a huge sigh of relief and the expectation is that nothing further is required for some years until there are sufficient changes in the avifauna to demand a new work. The effort then starts all over again. But surely technology now provides us with a more efficient model for presenting information about a county's avifauna in a timely fashion. In most counties or regions, a similar but less demanding effort is undertaken every year to produce a bird report. It is these and atlases that are the essential building blocks of an avifauna. If an avifauna was published online, is there any reason why species' accounts should not also be updated and published online? It would be impracticable and unnecessary to do so annually, but updating one group of species at a time as circumstances demanded would surely be both practical, and preferable to waiting another decade or two for the next published book. These ideas can be developed further. A good number of bird reports contain papers, many of a very high standard, reviewing aspects of the county's birdlife. These too could be available online, for access in whatever way the county decides to make its information available (by subscription or otherwise), just as many society newsletters already are. Once again, though, it would hardly be the best use of relatively scarce IT skills for each county to develop its own model. Could the BTO play a part here too? It would require specialist knowledge and experience and financial resources, and there would be a legion of decisions to be

taken, so the effort would be very considerable. Even if it were achievable, would it be worthwhile? Making accurate data about our avifauna available in a timely fashion is a top priority if we are to do our best to ensure that bird populations are not depleted further, so surely it is worth a serious review, perhaps initially through a joint working party involving the BTO, the RSPB and interested county societies. It may be different from fulfilling the desire of birdwatchers to have a record of the birds in their home area, but it does not make it any less justifiable.

There is, however, one other, quite different aspect. People have always liked books and still take pleasure in simply browsing through a nicely produced work, dipping in here and there. For many, browsing on a screen is simply not comparable, even if they are happy to read a novel on a tablet. That debate has been going on for more than a decade and in the meantime books, especially reference books, continue to appear at a healthy rate. Yet perhaps it is now time to take the plunge and put some serious effort into investigating how the collection and presentation of bird data in this country should develop? It might take a decade to achieve a coherent and practicable approach, which is applicable to all counties, but it is surely a subject worthy of serious attention.

*Peter Oliver*





# News and comment

Compiled by Adrian Pitches

Opinions expressed in this feature are not necessarily those of *British Birds*

## Buzzard poisoner convicted with BirdTrack data

A gamekeeper has been convicted of what the RSPB has described as ‘the worst case of bird of prey poisoning recorded in England’. Allen Lambert, 65, who worked on the Stody Estate, near Holt in Norfolk, was found guilty of deliberately killing ten Common Buzzards *Buteo buteo* and a Eurasian Sparrowhawk *Accipiter nisus* and of being in possession of pesticides and items used to prepare poison baits. He earlier pleaded guilty to

another key part of the defence argument – that the number of dead Buzzards found was too high to have been achieved through illegal poisoning in one area and that the carcasses must therefore have been ‘planted’ – was debunked in court by the use of data gathered by local birdwatchers lodged in the BTO’s BirdTrack database.

Nick Moran, BirdTrack Organiser, explained: ‘Counts of Buzzards in north Norfolk from the same

time period as the crimes took place (March–April) were extracted from BirdTrack and mapped. As well as proving beyond doubt that double-figure counts of Buzzards are a regular occurrence in Norfolk these days, data collected by BTO volunteers were used in court to highlight the recent population increase and range expansion of Buzzard. Data from *Bird Atlas 2007–11* and the *Norfolk Bird Atlas* were used to show the eastward spread and increasing population density since the previous breeding atlas in 1988–91, while CBC/BBS data spanning five decades helped to emphasise the recent, dramatic population increase.

‘It’s not unusual for birdwatchers’ records, provided impartially, to find valuable applications like this, though it’s the first time that BirdTrack data have been utilised in such a case.’

Head of RSPB Investigations, Bob Elliot, said ‘This is the worst case of bird of prey poisoning we are aware of in England, and one of the worst ever recorded in the UK.’ British Association for Shooting and Conservation chairman Alan Jarrett said: ‘BASC utterly condemns any persecution of birds of prey. Nothing can justify such actions. Every law-abiding person involved in game management and shooting will denounce anyone involved. In this case the law has run its course and justice has been served.’



Roger Tidman/FLPA

### 338. Common Buzzard *Buteo buteo* in Norfolk, April 2014.

five other charges including the illegal use of pesticides. Lambert will be sentenced later this month.

The hearing at Norwich Magistrates’ Court followed an investigation at the shooting estate in April 2013 by RSPB officers. They found the remains of several raptors in woodland and a feed bag containing nine dead Buzzards in Lambert’s house. Police found containers of the pesticide in Lambert’s car and storeroom, as well as a syringe and needles. The court heard that he wanted to ‘protect’ pheasants he was rearing on the estate.

Lambert claimed that a dog walker with a grudge against him had planted the dead birds, but the judge said his theory was ‘implausible’. And

## Two of our Hen Harriers are missing

So what does BASC make of the depressingly predictable news that two of the satellite-tagged young Hen Harriers *Circus cyaneus* that fledged in Lancashire this summer have already disappeared without trace? As Oscar Wilde might have said,

losing one young Hen Harrier is unfortunate, losing two is frankly suspicious.

The ‘Gone Girls’, as the RSPB styled them, were given the names Sky and Hope by local youngsters after they fledged in August. But the team tracking



their movements became concerned when not one but two tags stopped transmitting. Sky's satellite signal stopped suddenly on the evening of Wednesday 10th September with the data suggesting that she was roosting at her last known location, while Hope's last known location was sent on the morning of Saturday 13th September. It's highly improbable that the loss of satellite transmission is due to technical failure as only a tiny percentage of Hen Harriers fitted with satellite tags since 2007 have stopped transmitting when it was known the tracked bird was alive. A catastrophic tag failure at roost suggests either natural predation or human intervention but natural predation should not stop the tag transmitting data so suddenly.

TV presenter and Hen Harrier campaigner Chris Packham said: 'It's incredibly disheartening to discover that two of this year's chicks have already

apparently failed to survive. It shows how vulnerable Hen Harriers are and that four nests (the total in 2014) are nowhere near enough. Without satellite tagging, these disappearances might never have come to our attention but technology is on our side and we will keep watching.' The disappearance of the birds has been reported to Lancashire Police and the RSPB is offering a £1,000 reward for information.

And the response from BASC? Chairman Alan Jarrett said: 'We are very disappointed to hear of the loss of contact from two transmitters attached to these Hen Harrier chicks. At this early stage and in the absence of any evidence it is unwise to start pointing fingers and claiming the disappearance is due to illegal persecution. Such allegations are putting short-term campaigning over the longer-term issue of protecting and encouraging the re-emergence of the Hen Harrier in England.'

## And a Montagu's Harrier goes off the radar too

A female Montagu's Harrier *C. pygargus* shown on the BBC's *One Show* being fitted with a satellite tag has vanished in Norfolk under unexplained circumstances. Dutch researchers tagged three Montagu's Harriers, including this adult female, in Norfolk in July. The missing harrier, a three-year-old bird nicknamed 'Mo', was last detected leaving a roost site at first light close to Great Bircham on 8th August.

Ben Koks of the Dutch Montagu's Harrier Foundation said: 'Since 2005 we have tagged 58 Montagu's Harriers, and a sudden loss of signal is exceedingly rare. It is very unusual that an experienced bird like this would abruptly disappear, especially while the tag was in the process of sending data, as it had done successfully for the previous few weeks.'

Mark Thomas, RSPB Senior Investigations Officer, said: 'There are very few possible reasons for Mo's disappearance, either she was caught by a Fox

[*Vulpes vulpes*] and the tag was immediately taken underground, or she suffered illegal persecution and her tag was deliberately destroyed. With only seven pairs in the UK, the loss of a breeding female is a serious setback to this threatened bird of prey.'

Naturalist and *One Show* presenter Mike Dilger filmed the item with Mo. He said: 'It's a very sad situation. I personally helped to tag Mo: she was a beautiful, healthy harrier and by now she should be zipping through the skies of Senegal. This is a tragic loss of an amazing, and rare bird.'

The tag fitted to this bird was sponsored by the owner of Lush Cosmetics, Mark Constantine, who named the harrier after his wife Mo. Mark Constantine has offered a reward of £5,000 for information on the missing harrier. The two other birds tagged, Madge and Mark, have begun their migration and are currently nearing their wintering grounds in Senegal. You can follow their movements at [www.rspb.org.uk/montytracking](http://www.rspb.org.uk/montytracking)

## Happier harrier news

An RSPB initiative aimed at protecting Hen Harriers in Northumberland has won this year's National Lottery Award for Best Education Project – and a £2,000 prize. Skydancer – a four-year project – works with schools, communities and the shooting industry to raise awareness and promote the conservation of England's most threatened bird of prey. The project is funded by the Heritage Lottery Fund (with a grant of £317,700) and United Utilities, with additional support from the Forestry Commission. Selected as one of seven finalists from hundreds of entries, Skydancer emerged the winner after amassing more than 7,500 public votes.

Blánaid Denman, who has run Skydancer since it began in 2011, said: 'I'm absolutely delighted that we've won this award. It's a fantastic opportunity to highlight the plight of this amazing bird to an audience of millions on primetime TV, not to mention the perfect excuse to buy a new dress. The more people we can inspire about Hen Harriers, the best chance we have of rescuing the species from the brink of extinction as a breeding bird in England.'

Skydancer has been very active in Northumberland, with Blánaid and her team delivering Hen Harrier-themed school assemblies, workshops, and field trips, as well as community talks to groups ranging from the WI to local bird clubs.

## Maltese MP nominated as EU Environment Commissioner

It's not quite the same as appointing Dracula to run a blood bank... but the nomination of Maltese politician Karmenu Vella to be the next European commissioner for the environment has prompted incredulity – and outright opposition – from environmental NGOs.

That a senior politician from Malta, the worst offender in Europe for flouting the EU Birds Directive, has been put forward by incoming Commission President Jean-Claude Juncker is a worrying indication of where the new-look Commission's priorities may lie. In his letter inviting Vella to join the Commission, Juncker asked him to 'overhaul the existing environmental legislative framework to make it fit for purpose', starting with 'an in-depth evaluation' of the Birds and Habitats Directives and assessment of 'the potential for merging them into a more modern piece of legislation'.

Vella appeared before the European Parliament on 29th September and failed to impress. According to Ariel Bruner, Head of EU Policy at BirdLife Europe: 'Vella was vague, evasive and often inaccurate. I don't think we can feel reassured in any way by his performance.' Angelo Caserta, Director of BirdLife Europe, concluded: 'No-one expects a new commissioner to be on top of all the dossiers, but they should at least show ambition and determination to tackle environmental issues. Vella clearly failed on this front. It is clear to me that this Commissioner must be rejected, to force Juncker to reconsider his approach.'

Read the thoughts of Rupert Masfield of BirdLife Malta here: [birdersagainst.org/guest-post-juncker-courts-controversy-over-new-maltese-commissioner](http://birdersagainst.org/guest-post-juncker-courts-controversy-over-new-maltese-commissioner)

## EU considers diclofenac ban as Spanish vulture death reported

The European Commission has mandated the European Medicines Agency to assess the risks to vulture populations of the use of veterinary medicines containing diclofenac. This represents a major breakthrough and opens the door for a European ban on the killer drug that wiped out entire vulture populations in Asia. Diclofenac is a veterinary anti-inflammatory drug that kills vultures and eagles – in India, it caused a 99% decline in vulture populations before it was banned. Incredibly, veterinary diclofenac has now been allowed to be used on farm animals in Europe – in Estonia, Italy and Spain for cattle, pigs and horses, and in the Czech Republic and Latvia for horses only. The drug has been marketed by an Italian company named FATRO, and was allowed using loopholes in the EU guidelines to assess risk of non-steroidal anti-inflammatory drugs (NSAIDs).

The European Medicines Agency has now opened a public consultation on the use of veteri-

nary anti-inflammatory medicines and is expected to take a decision on a ban by 30th November.

Meanwhile, researchers in Spain have reported the first European vulture death attributable to poisoning by an anti-inflammatory drug. The carcass of a wild Eurasian Griffon Vulture *Gyps fulvus* was found in 2012 on an Andalusian game hunting reserve and examined forensically. The bird had severe visceral gout, a finding consistent with *Gyps* vultures from Asia that have been poisoned by diclofenac. Liver and kidney samples contained elevated levels of flunixin, an NSAID. This is the first reported case of a wild vulture being exposed to and apparently killed by an anti-inflammatory drug outside Asia. It is also the first reported instance of mortality in the wild resulting from environmental exposure to an NSAID other than diclofenac.

See the abstract of the paper in *Conservation Biology* at: <http://onlinelibrary.wiley.com/doi/10.1111/cobi.12417/abstract>

## Corn Crakes crank up a population surge

The Corn Crane *Crex crex* has enjoyed its most successful breeding season in at least 45 years, with the national population reaching its highest level since counts began. In Scotland 1,289 calling males were recorded between May and July this year, as part of an annual RSPB Scotland survey.

The new figures are a welcome surprise, since it had previously been predicted that Corn Crane numbers would fall this year, after the species suffered an alarming decline of 23% in 2013. The biggest single-island population is on Tiree – 396 calling males in 2014.

Paul Walton, RSPB Scotland, said: 'This year's figures for Scottish Corn Crakes are fantastic [but] last year's fall in Corn Crane numbers was worrying and this bird remains highly vulnerable, so we can't afford to be complacent. Even though there has been an increase in numbers this year, we have so far failed to expand the Corn Crane's breeding range. We also need to bring together the methods we've used for Corn Crakes and apply them to other Scottish birds that are in trouble, like the Curlew [*Numenius arquatus*] and the Corn Bunting [*Emberiza calandra*], to help secure their future in Scotland.'



## Shear delight on Scilly

Manx Shearwater *Puffinus puffinus* chicks have been seen outside their nest burrows for the first time in living memory on St Agnes and Gugh in the Isles of Scilly following the first year of a project to remove rats. Although Manx Shearwaters have bred on these two islands for decades, eggs and chicks were always eaten in the burrows by rats, so that young were never given a chance to fledge. But last winter the islands' rats were removed and conservationists are now celebrating

the first sightings of healthy youngsters.

RSPB Project Manager Jaclyn Pearson said: 'We are absolutely delighted to announce this news. It is down to the help of everyone involved in the project so far, particularly the community of folk living on the islands who continue to keep these islands rat-free. This is an official status we hope to achieve by early 2016. But in the meantime, with these ten Manx Shearwater chicks the project is having exactly the effect we hoped for.'

## Joint OBC/BOC meeting in London

The OBC's Annual General Meeting this year is being held jointly with the British Ornithologists' Club and the Natural History Museum on Saturday 22nd November at the Flett Theatre, Natural History Museum, Cromwell Road, London SW7 5BD from 10.00–17.30 hrs. A packed agenda includes talks by Pamela Rasmussen on new species and rediscoveries, Debbie Pain on

saving the Spoon-billed Sandpiper, Chris Gooddie on Bukit Barisan Selatan, Stuart Marsden on Asia's large frugivorous birds, Robert Prÿs-Jones on Allan Octavian Hume and Per Alström on warblers and larks. The meeting is open to members and non-members of OBC and BOC. Admission is free to members, donations from non-members invited.

## Scottish offshore wind plans cause concern

RSPB Scotland has expressed major concerns about the granting of consent for four offshore windfarms in the Firth of Forth by Scottish ministers. The Firth of Forth supports seabird populations of European importance, perhaps most notably the Bass Rock Gannet *Morus bassanus* colony (110,000 birds), but also Kittiwakes *Rissa tridactyla* and Puffins *Fratercula arctica* breeding on the Isle of May and at Fowlsheugh. Nowhere in Europe have offshore wind schemes been proposed in such close proximity to seabird colonies of this size. There is currently huge uncertainty over the predicted impacts of collisions of seabirds with turbines and displacement from important foraging grounds at sea.

The latest estimates suggest that well over a

thousand Gannets and hundreds of Kittiwakes could be killed each year during the summer months alone and many hundreds of Puffins could die as a result of losing important feeding areas. Countless other birds also pass through the area on migration, and these developments will undoubtedly affect them.

Stuart Housden, Director of RSPB Scotland, said: 'If the models and assessments of potential damage prove accurate, these windfarms would be amongst the most deadly for birds anywhere in the world. RSPB Scotland wants to see the development of offshore wind in Scotland, but it must not be at such massive cost to our internationally important seabirds.'

## New member of the Rare Breeding Birds Panel

RBBP membership includes representation from the three funding bodies: JNCC, RSPB and BTO. Simon Gillings has been the BTO's representative since 2008, but following recent restructuring at the BTO, Dawn Balmer will be the BTO's representative on the Panel. Members of the RBBP extend warm thanks to Simon for his many and useful contributions over the last six years and look forward to working with Dawn.

As the end of 2014 approaches, the deadline for

submission of data on rare breeding birds in the UK in 2013 draws near. We urge anyone with relevant but unsubmitted information for that year to send details to county recorders urgently. In turn, county recorders are asked to submit collated breeding records of rare species to the Panel Secretary (at [secretary@rbbp.org.uk](mailto:secretary@rbbp.org.uk)) by 31st December 2014. The list of species currently on the RBBP list can be downloaded at [www.rbbp.org.uk/rbbp-species-list-full.htm](http://www.rbbp.org.uk/rbbp-species-list-full.htm)

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# Honey-buzzards in Britain

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**Abstract** This paper reports the findings of a long-term study of the Honey-buzzard *Pernis apivorus* in Britain during the breeding season. It is based upon data from 406 nesting attempts in 73 different nesting areas, between 1972 and 2012. Since a paper in *British Birds* in 1999, which reported on the early years of this study, the introduction of a colour-ringing project, satellite tagging and more in-depth dietary analysis has helped to broaden the scope of the project, allowing investigation of dispersal and population dynamics as well as all aspects of breeding biology. The Honey-buzzard remains a rare breeding bird in Britain, although the national population is now thought to be in the region of 100–150 pairs. A greater understanding of the species' habits and behaviour during the breeding season is a critical step towards effective conservation of one of Britain's rarest and least-known breeding raptors.

## Introduction

A glimpse of the spectacular 'butterfly' display flight of the Honey-buzzard *Pernis apivorus* above its woodland haunts is instantly thrilling and beguiling for ornithologists. Always considered a scarce breeding

bird in Britain, the Honey-buzzard has been surrounded by a veil of secrecy in recent times, which has hampered both understanding and recording. The continuing threat from egg-collectors and the possibility of disturbance from birdwatchers has to be



balanced against the need to disclose sites to forestry workers, planners and others, to prevent disturbance or development from proceeding in ignorance of the presence of breeding birds. Roberts *et al.* (1999) aimed to shed some light on the Honey-buzzard's secretive and often misunderstood breeding habits in Britain. That paper was based upon information gathered from 52 nesting attempts in 16 different nesting areas. We now have information relating to 406 nesting attempts from 73 different nesting areas.

Further progress since 1999 includes the use of nest cameras to record complete breeding cycles, a colour-ringing project (Roberts & Lewis 2008), satellite tagging of adults, analysis of food provision to chicks (Roberts & Coleman 2001; Thompson 2007), faecal analysis (Roberts 2009a) and many hundreds of hours of fieldwork. A much more open attitude in recent years has resulted in considerable and welcome dissemination of information and data from across the country and publication of another five short papers and notes (Roberts & Coleman 2001, Roberts & Lewis 2003, 2008, Mummery *et al.* 2004 and Wiseman 2012). This paper aims to provide considerably more detail and information on breeding Honey-buzzards in Britain, with the long-term aim of furthering a more enlightened approach to study and research, and with conservation requirements firmly in mind.

## Methods

Information was collected on 406 nesting attempts between 1972 and 2012. Of these, 104 nests were found during incubation, the clutch size recorded and progress followed

through the complete nesting cycle. A further 192 were found while chicks were present and 29 were 'summer nests' built by non-breeding pairs. The remaining 81 nests were built or refurbished but the outcome is unknown. These data have been collected under the required Schedule 1 licences issued by Natural England and Natural Resources Wales.

Individual nest trees are termed breeding sites. Data recorded at nest sites include: tree species, nest height, woodland type (commercial plantation or other woodland; broadleaf, conifer or mixed, the last containing at least 10% of each), distance from nearest ride or clearing and distance from roads. The distances to the nearest Honey-buzzard breeding nest and from the previous year's nest were established, whether the nest site was new or reused was recorded where known, and periods between nest reuse calculated. The area of woodland surrounding nests was measured from 1:50,000 OS maps. Clear-felled and re-stocked areas were counted as woodland.

Egg measurements were recorded and clutch size and detailed biometrics of chicks taken, at various stages of development for some nests. First-egg dates were established



**339.** A typical adult male Honey-buzzard *Pernis apivorus* in flight, Hampshire, August 2013.

Richard Jacobs

Steve Roberts



**340.** Adult male Honey-buzzard *Pernis apivorus*, an individual captured for satellite tagging, South Wales, July 2008. Note the small, dense, scale-like feathers in the forehead and lores, which are thought to reduce the possibility of stings, while the slit-like nostrils reduce the likelihood of both wasp stings and soil ingress when digging.

by a range of methods: using nest camera data, from nest visits during laying, by working back from a known hatch date (allowing for 32 days' incubation), or from the estimated age of the oldest chick (Bijlsma 1998 and authors' data). Chicks were fitted with BTO and colour rings, under licence.

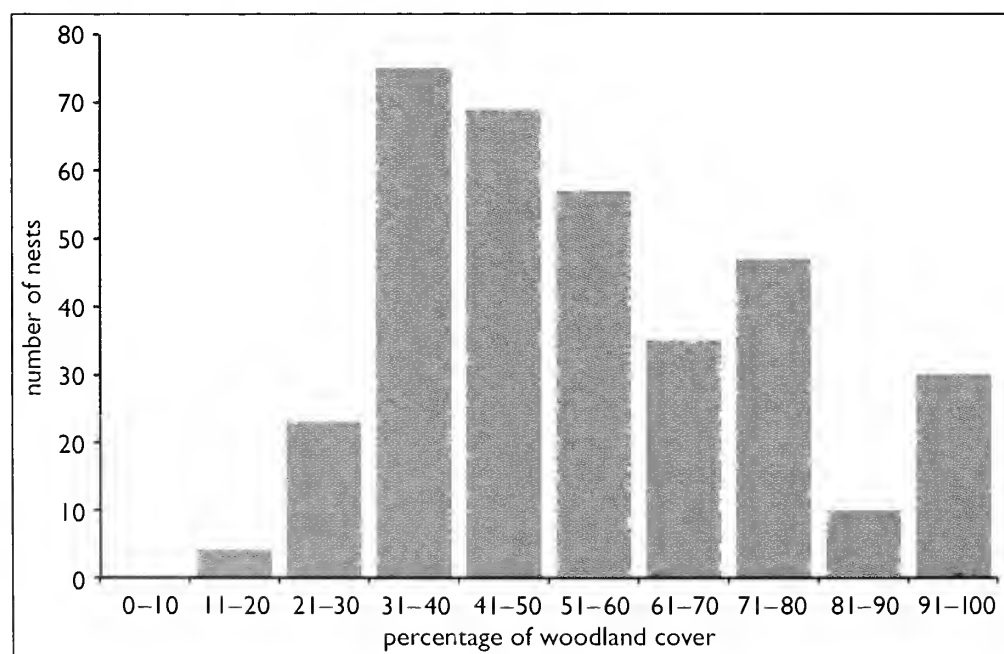
The use of nest cameras has had a major impact on our work, providing accurate data on first-egg dates, incubation period, hatching and fledging dates; vital detail on nest-building, division of parental duties during incubation and provisioning of chicks, prey type and behaviour; and the

tors elsewhere in Britain varied and not all details are available for all nests; this explains the variation in sample size in some analyses.

### Habitat requirements

In Britain, Honey-buzzards have bred in a wide range of woodland habitats (Roberts & Lewis 2003), including ancient broadleaved woodland, mixed broadleaf and conifer, and largely upland commercial conifer plantations (typical of the New Forest, Sussex and Wales respectively). Nests have been found from sea level in some areas to over 500 m asl in western Britain, in trees on steep hillsides,

almost among crags in areas such as Cumbria and North Wales, as well as the flatter landscapes of East Anglia. Some nests are deep in remote woodlands, others are close to busy roads. Although most nests are associated with large woodland blocks, a pair in southern England bred successfully in a small wood of only 15 ha and occasional nests have been found in isolated trees (in the German Rhineland no successful nests have been



**Fig. 1.** The amount of woodland cover in the vicinity of 350 Honey-buzzard *Pernis apivorus* nests in Britain. Data presented as a percentage of woodland cover in a 5 km x 5 km square around the nest.



found in woodland of less than 5 ha; Kostrzewa 1998). The mean percentage of woodland cover within a 25 km<sup>2</sup> area around the nest was 53%, range 12–100% (n=350; fig. 1). An analysis of the percentage of woodland in a smaller area (2.5 km × 2.5 km), around a smaller sample of nests (n=213), gave a mean of 59%, range 10–100%.

Of 356 nesting trees where the woodland type was known, 160 (44.9%) were in commercial conifer plantations and 196 (55.1%) were in other woodland.

### Aerial display

The Honey-buzzard's display flight is an ornithological spectacle. The displaying bird powers downwards, gaining speed and momentum, then swoops upwards, raising its quivering wings vertically to float like a huge butterfly. At many breeding sites, however, particularly in May, soon after the birds arrive, it may be rarely observed. The butterfly display flight seems unrelated to courtship activity and appears to be used mainly for territorial advertisement. Most established pairs undertake little or no wing-clapping in May. They simply circle out of the nesting woods, or indulge in synchronised flight (Roberts *et al.* 1999), where both birds mirror each other's flight patterns. However, this can also be performed by one pair member and an intruder (either a bird from another breeding site or an unmated individual), and occasionally more than two birds are involved.

Breeding birds near their nest site may wing clap through excitement or anxiety, and low-altitude wing-clapping is sometimes seen just above the nest or as birds enter a nest site through the canopy. Wing-clapping just above the canopy often indicates that there is another bird (a mate or an intruder) within the wood. A bird leaving the nest after being relieved by its mate will sometimes circle back low over the nest site and wing clap. A recently fledged chick was seen wing-clapping over its nest site in Kent (Rob Clements pers. comm.), a further indication that this behaviour is not always linked to pair-bonding or territorial behaviour (Roberts *et al.* 1999). Long periods of protracted wing-clapping are usually performed by an

unmated bird, male or female. Unmated females will sometimes undertake protracted wing-clapping over large areas, particularly when a mated male is in the vicinity. At one nest site the paired male could rarely fly from the nesting wood without being persistently solicited by two unattached females, resulting in lengthy aerial activity, wing-clapping and synchronised flight (Roberts 2009b). Protracted wing-clapping is generally not a good indicator of successful breeding.

Much more wing-clapping occurs from mid July, once chicks are well developed in the nest. Data from the Netherlands suggest that this may coincide with the arrival at nesting sites of birds scouting for potential mates or visiting from nests some distance away (Rob Bijlsma pers. comm.). Visiting birds often display vigorously near active nests, triggering a similar response from resident adults. Vigorous wing-clapping in July and August is considered by many field-workers to be prompted by the arrival of another bird. Honey-buzzards carrying food to the nest have also been observed visiting the nest site of another pair, wing-clapping and showing the food they are carrying before continuing to their own nest. However, most breeding birds remain unobtrusive, with minimal aerial activity, other than a little synchronised flight and circling. They generally keep a low profile whilst busy feeding young.

### Nest sites

A wide variety of tree species are used as a nest site. In total, 153 (43%) nests were found in broadleaved woodland, 85 (24%) in coniferous woodland and 120 (33%) in mixed woodland. The most-used broadleaved tree species was Pedunculate Oak *Quercus robur* (133 nests, 33%), and the most-used conifer was Douglas Fir *Pseudotsuga menziesii* (65 nests, 16%); see table 1. Dividing Britain into broadly lowland (the south and east, including Dorset and Nottinghamshire) and upland (the north and west), 264 nests were recorded in lowland areas, of which 179 (67.8%) were in broadleaved species and 85 (32.2%) in conifer. Of 140 nests recorded in the uplands, 42 (30.0%) were in broadleaf and 98 (70.0%) in conifer, reflecting the predominance of conifers in the uplands. In



341. A typical Honey-buzzard *Pernis apivorus* clutch of two eggs; this nest, in a Beech *Fagus sylvatica* tree in Sussex in June 2007, is unusually exposed above the surrounding canopy.

total, only five nests (1.4%) were found in either conifers in predominantly broadleaved woodland, or broadleaved trees in predominantly conifer woodland. Hardey *et al.* (2009) reported that 33 (67%) of 49 nests in the Scottish Highlands were in mixed conifer and deciduous woodland, the remainder in

conifer plantations, although they noted that nests in mixed woodland were easier to locate; while Etheridge (2007) noted that 55% and 39% of nests in mixed woodland in Scotland were in Beech *Fagus sylvatica* and Pedunculate Oak respectively, and 75% and 19% of nests in conifer plantations were in Douglas Fir and Scots Pine *Pinus sylvestris* respectively. Bijlsma (1986) found that 58% of 90 pairs in his Dutch study area nested in mixed woods, 32% in coniferous and 10% in deciduous woodland, suggesting a preference for mixed woods (only 25% of available woods were mixed).

Individual pairs may select a wide diversity of nest trees and woodland habitat over a period of years. Of 328 nests where the tree species was recorded for the same territory in successive years, 36 involved birds moving from broadleaf to conifer or vice versa. Of 296 nests where woodland type was recorded in successive years, there were 42 instances (12%) of pairs moving from one woodland type to another the following year; of those 42, a total of 20 (48%) remained in the same category of tree species (broadleaf or conifer) used previously.

Of 345 nests, 219 (63%) were noted to

Table 1. Species of nest tree used by Honey-buzzards in Britain for 404 nests where tree species recorded (264 lowland and 140 upland nests); results show all Britain (lowland/upland).	
Species	Number of nests
Tulip Tree <i>Liriodendron tulipefera</i>	1 (1/0)
Beech <i>Fagus sylvatica</i>	54 (38/16)
Silver Birch <i>Betula pendula</i>	9 (2/7)
Pedunculate Oak <i>Quercus robur</i>	133 (115/18)
Elm <i>Ulmus carpinifolia</i>	1 (0/1)
Sweet Chestnut <i>Castanea sativa</i>	22 (22/0)
Alder <i>Alnus glutinosa</i>	1 (1/0)
Larch <i>Larix decidua</i>	17 (8/9)
Sitka Spruce <i>Picea sitchensis</i>	38 (2/36)
Western Hemlock <i>Tsuga heterophylla</i>	25 (8/17)
Silver Fir <i>Abies alba</i>	5 (5/0)
Douglas Fir <i>Pseudotsuga menziesii</i>	65 (44/21)
Scots Pine <i>Pinus sylvestris</i>	29 (16/13)
Grand Fir <i>Abies grandis</i>	4 (2/2)



be within 20 m of a ride or clearing. The proximity of a ride or clearing appears to be important in the selection of nest sites, particularly in dense coniferous woodland, affording better access for the adults. At other nests

there was easy access, either via a more open woodland structure or, in upland conifers, by means of a steep slope allowing direct access to the nest tree. Nearby paths or rides potentially increase the risk of disturbance, but this seems to have negligible impact upon nest-site selection or subsequent breeding success.

Distance to the nearest road was known for 295 nests; see table 2, which also shows fledging success rate of those nests. In statistical terms, the distance to the nearest road appears to have no effect on success rate. Importantly, even though traffic noise at ground level was muffled by the trees, at the nest itself noise levels were often considered high, with climbers having difficulty conversing with colleagues on the ground. Honey-buzzards seem to be little affected by traffic noise or close proximity of people on paths and rides, selecting nest sites in such areas even when suitable options exist further away, deeper in the woodland. Although proximity to rides and roads involves greater disturbance potential, other factors must play a more dominant role in nest-site selection.

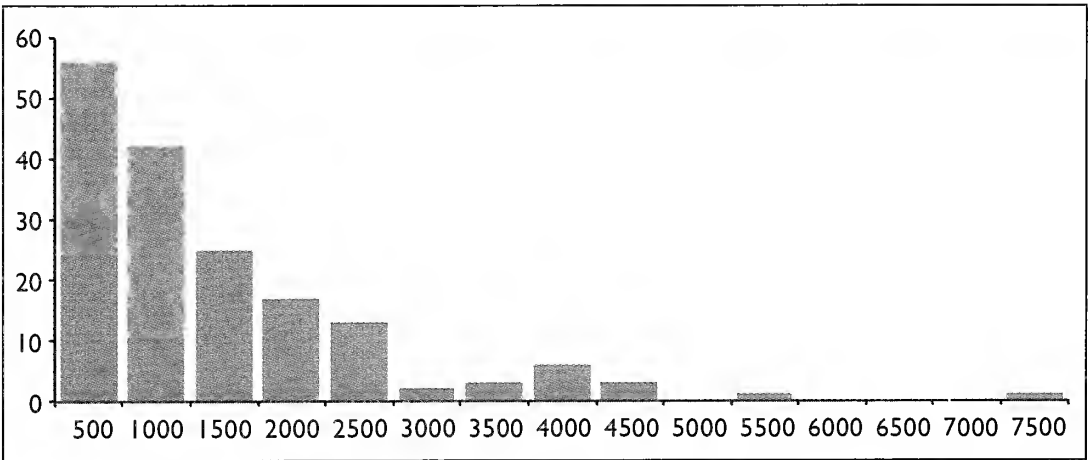
When a species is scarce and widely dispersed, nearest-neighbour distances can be misleading, as some nests are inevitably never found. However, in some well-studied areas, such as South Wales, the New Forest and Sussex, nearest-neighbour distances give a good indication of potential nesting densities. Pairs can nest surprisingly close together, with one

**Table 2.** Distance from active Honey-buzzard nest to nearest road, and associated fledging success rate.

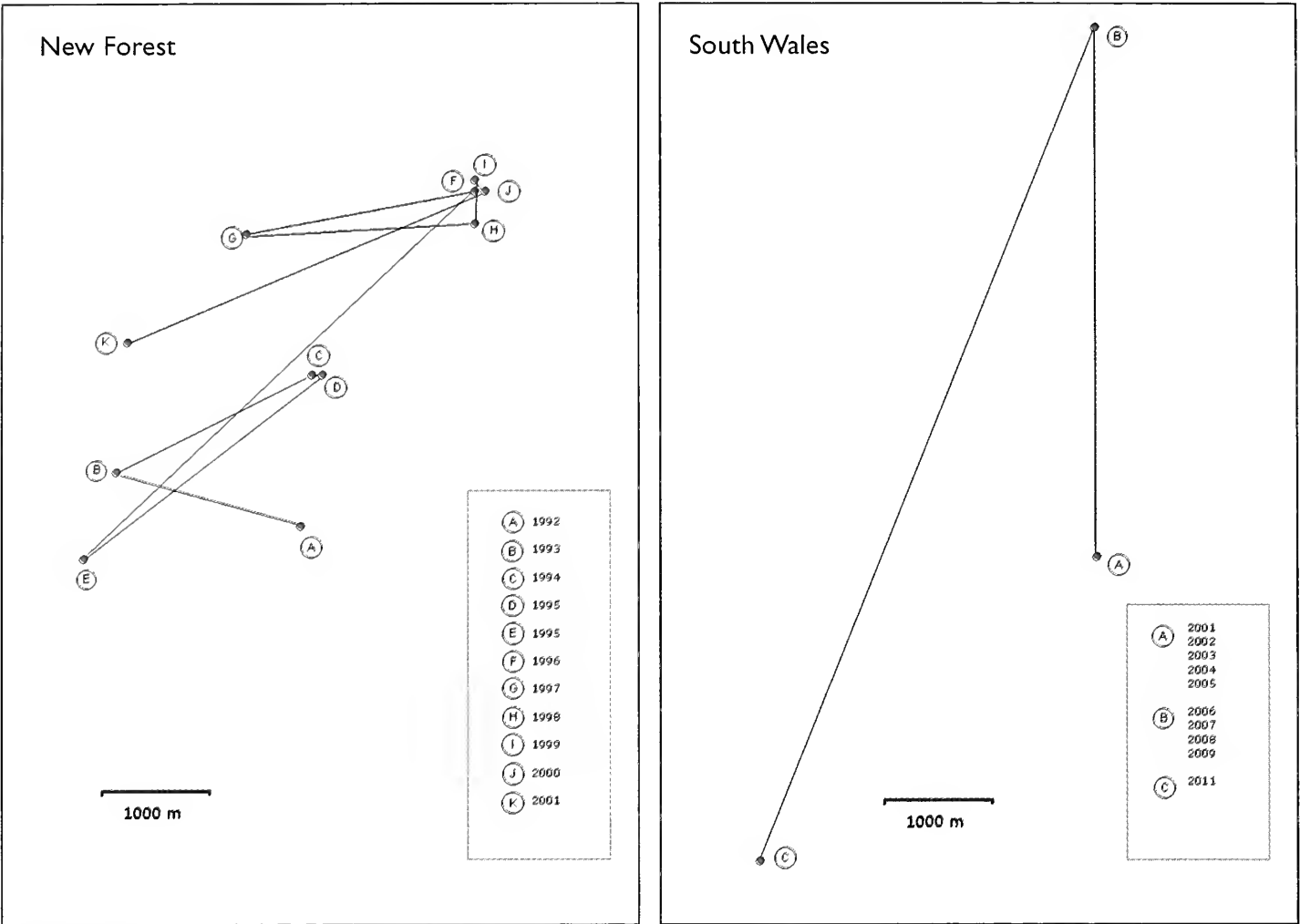
Distance from road	Number of nests	Dual carriageway	A road	B/minor road	Nests successful
<20 m	6 (2%)	0	0	6	4 (67%)
<250 m	84 (28%)	1	29	54	64 (76%)
<1 km	251 (85%)	32	72	147	184 (73%)
≥1 km	44 (15%)				34 (77%)

area in South Wales holding four pairs, with a nearest-neighbour distance of 1.75 km, and all nests within 4 km of each other (Roberts & Lewis 2003). Similarly, in Sussex, pairs have bred as close as 2 km apart. Nest spacing in the New Forest is greater, with nearest neighbours no closer than 4 km (Roberts & Lewis 2003; A. Page pers. comm.). In Nottinghamshire, two active nests, containing one and two chicks, were found only 1 km apart, and the observer considered that this may have been a case of polygamy, although since the adults were not colour-marked this could not be proved (Roy Frost pers. comm.). The mean nearest-neighbour distance in South Wales during a 13-year period was 3.9 km (range 1–11 km; n=37); that in Sussex was 7.7 km (2–22 km; n=39). Pairs have been recorded nesting within 2 km of each other in Hampshire and Nottinghamshire, while Bijlsma (1986) reported that nest spacing in his Dutch study area could be as close as 470 m.

Of a sample of 262 nest sites, 142 (54%) pairs built at a previously unused site, 93 (35%) pairs reused the previous year's nest, and 27 (10%) pairs built at a site that had been used more than one year ago. The



**Fig. 2.** Distance (m) between nest sites used by the same pair of Honey-buzzards in different years (n=169). Each bar 500 m in distance (i.e. first bar shows movements of up to 500 m from previous nest site, second bar represents movements of 501–1,000 m from previous nest site, and so on).



**Figs. 3 & 4.** The shifting nest-site location of two Honey-buzzard territories in Britain.

longest consecutive use of the same nest was five years, observed on three separate occasions. The longest known interval prior to reuse was six years, observed once. In the Scottish Highlands, a nest in an oak was reused five times between 1978 and 1991 while another nest in a Beech was reused four times over a period of 17 years (Etheridge 2007). In the Netherlands, Bijlsma (1986) found that 15 of 27 territories were used six times or more in a ten-year period; seven nests were used twice, not necessarily in consecutive years; one nest was used three times and another eight times.

A shift in nest site between years was known in 169 cases, of which 153 (91%) moved <2.5 km, including 98 pairs (58%) that moved <1 km and 56 pairs (33%) that moved <500 m. The remaining 16 pairs (9%) moved further, the maximum recorded distance being 7.5 km (fig. 2). Figs. 3 & 4 show contrasting nest-site movements over a number of years for two territories.

In Germany the location of Honey-buzzard nest sites was shown to be influenced by the proximity of other, similar-sized raptors (Kostrzewa 1998), but such data were not available for analysis in Britain.

**Nests and nest-building**

Upon their return to Britain, Honey-buzzards build new nests or refurbish old ones. Nests are typically adorned with copious greenery garnered from the immediate vicinity (chiefly oak, Beech, European Larch or Douglas Fir), though birds have been observed flying above the tree canopy with large green sprays for hundreds of metres to the nest. Twenty-six different tree/plant species have been recorded as nest linings including Rowan *Sorbus aucuparia* berries, Ash *Fraxinus excelsior* keys, Bracken *Pteridium aquilinum* and Ivy *Hedera helix*.

During the nestling period, green material is renewed frequently by both parents. Adults have been observed hanging upside down at the tips of branches breaking off sprays of leaves. Ontiveros *et al.* (2008) showed that Bonelli's Eagles *Aquila fasciata* selected greenery with high concentrations of aromatic compounds known to repel insects; the use (and renewal) of green material may be related to its effectiveness in preventing parasitic infestation. Both Larch and Douglas Fir contain *beta*-pinene, an effective aromatic insect repellent. The large range of green linings recorded may make Honey-buzzard

nests appear strikingly verdant in late summer.

Refurbished nests may have been used the previous year or have been unused for several years. New nests are often built on top of a former nest or another structure, such as a Grey Squirrel *Sciurus carolinensis* drey or Common Buzzard *Buteo buteo* nest. Many nests do not survive the winter, being constructed rather high in the canopy and often away from the main trunk, with green and leafy twigs – initially bulky, but prone to wilt and decay during a British winter. Indeed, emergency repairs are sometimes required during the season, and nests are occasionally found on the ground with the brood perished nearby. Other nests, sited securely in a tree crotch are more durable and, when added to annually, can result in a large, solid structure. Birds may more readily build new nests on their return from winter quarters if little remains from the previous year (Roberts *et al.* 1999), or if a previous nesting attempt has been unsuccessful. The authors and other workers have had some success wiring old nests in place, or constructing sturdy artificial nests, which have been used successfully over many years.

Nest heights were measured and/or estimated (thus overall heights should be regarded as approximate); mean nest height was 16.5 m (6–26 m;  $n=301$ ), and there was no significant difference between broadleaved and conifer species. Most nests were situated in the top most quarter of the nest tree, well within the green canopy of conifers. In broadleaved species, nests are generally found in smaller crotches in the crown, rather than lower down in main forks and are occasionally some way out from the main trunk.

Many nests are extremely well hidden, at least from below, either in the dense foliage of conifers or in broadleaved trees in full leaf. Very few nests are easy to find. A glimpse of a small part of the nest is often all that is visible to the observer, and a step either way renders the nest completely obscured; some are impossible to see from any position on the ground. Honey-buzzard chicks excrete very little uric acid over the nest rim, so the tell-tale white splashes, so evident under Northern Goshawk *Accipiter gentilis* and

Common Buzzard nests for example, provide no clue beneath Honey-buzzard nests.

In unthinned forestry plantations, searching from below is usually fruitless and nests can only be located by precise marking from vantage points, and then repeated climbs in the suspected nest area. Many nests can be located only by climbing a suitable tall tree and spending many hours watching to establish the exact location. Some field-workers suggest that the threat of predation by Goshawks may result in especially well-hidden nests (see also Gamauf *et al.* 2013), although it is hard to imagine that Goshawks are unaware of the exact position of all other raptors breeding close to their territories.

Although many Honey-buzzards fly directly to nests when provisioning chicks and circle out from the nest site when foraging, some adults take a more elaborate route to the nest. One pair in our study regularly entered a large block of woodland carrying food, then travelled beneath the canopy before crossing a road to the nest in a belt of trees detached from the woodland. Again, in some cases, the presence of potential predators, such as Goshawks, may explain such evasive behaviour, though it has also been noted in areas where Goshawks are absent.

Honey-buzzards may pair for several years before attempting to breed; in Britain, age of first breeding is typically 3–6 years (Roberts & Lewis 2008). Observations of colour-ringed birds show that young birds often pair up and hold territory without laying eggs. As they gain maturity and experience, they often build ‘summer nests’ – constructed any time from May onwards, they typically contain much greenery, are very similar to active nests and can be visited with food. When mature, some birds may repair and use a summer nest built the previous year, while others build a completely new nest. Mature pairs, particularly where there has been a change of partner, and single males also construct summer nests; in the latter case the nest may help to attract a female. Of 29 summer nests known to us, constructed by 20 different pairs (or individuals), eight (28%) were used as breeding sites in the following or a subsequent year.

Experienced males, which have bred



successfully for many years, and whose mates have failed to return, often build nests alone. These nests are well constructed, lined and difficult to tell from active nests (especially since the female at an active nest can be particularly unobtrusive). Experienced females which have lost a mate will refurbish old nests alone, but there is no evidence that they will construct a completely new nest. An experienced male with a new young female may build a well-constructed nest, though no eggs are laid. This has been confirmed on three occasions when regular breeding females failed to return; after a period alone, the male was joined by a new female but breeding did not take place immediately. If experienced females are partnered by a new young male, eggs are more likely to be laid and this has been confirmed twice through observations of colour-ringed birds.

### Post-natal movements and breeding age

A colour-ringing project for Honey-buzzards was started in 1997 (Roberts & Lewis 2008); to date, 220 chicks have been colour-ringed. When, at a Welsh nest in 2006, not one but both adults were found to be colour-ringed, it was the first definitive proof that young Honey-buzzards raised in Britain returned to breed (rather than to mainland Europe). The use of nest cameras has greatly increased the amount of data on colour-ringed birds. The cameras, mainly camcorders equipped with extended-life batteries and hard drives, are installed at nests (about 3 m from the nest)

ideally when the chicks are about two weeks old. At this time, the female is still likely to be attendant, and the male, when returning with food, spends time feeding the chicks (allowing time to record ring details); when chicks are older, nest visits by the adults may be brief, with food dumped and the chicks being left to feed themselves. The camera is removed for analysis, either later the same day or the next day. These cameras also provide clear evidence that nest visits, which inevitably involve climbing the nest tree, have no discernible impact on the subsequent behaviour of either adults or chicks.

Eight individuals fitted with colour rings have been recorded breeding to date. In South Wales, a pair, both colour-ringed, held a territory for two years before breeding in the third year. They built a summer nest the year before breeding and returned to lay in that nest in the third year. The male was four years old at the first breeding attempt, 140 km from his natal site; the female was six years old, 100 km from her natal site. After breeding at a new nest for several years, the male disappeared, presumed dead. The female subsequently bred with a new male after a transitional period: she remained alone for one season, though still refurbished the old nest, then secured a new mate the following season and laid eggs which failed to hatch. The subsequent season resulted in successful breeding. At 12 years old, this female was the oldest Honey-buzzard recorded breeding in the UK. In May 2013, she was found dead on a beach in Cornwall having failed to make it back in her 13th year.

In Sussex, Surrey and Hampshire, three birds colour-ringed as chicks have been recorded breeding at five, six and ten years old, having moved 22 km, 16 km and 17 km respectively from their natal sites. Of particular note, the first bird, female 'white AJ', hatched in 2005, had bred successfully in Hampshire since five years old, including in 2012, and yet was recorded breeding (successfully) with a male at his regular site in Surrey in 2013. The male's usual (colour-ringed) female was absent, and white AJ had moved 15.5 km from her regular Hampshire breeding site to partner



**342.** Adult male Honey-buzzard *Pernis apivorus* at nest in Sitka Spruce *Picea sitchensis*, South Wales, July 2011. This photo shows a three-year-old bird, one of two siblings nesting close to their natal site.

the Surrey male. This was surprising, since our observations in Wales showed that females that lost a partner continued to maintain territories for some years before eventually securing a new mate.

In two cases in South Wales, after a period when regular males failed to return to their breeding area, the mature females, which continued to hold territory, eventually mated with young males (three years old) from the

same area. The two young males were siblings from a natal site only 4 km and 4.5 km from the nests at which they bred; indeed, one male bred with his mother. In these cases, the young males were able to fill a space left by missing older males. These observations suggest that Honey-buzzards returning to the UK for the first time as adults probably visit their natal site first. If they find it occupied, they move on (or are driven away), resulting in a more typical natal dispersal distance. The observations also contrast with those of Mummery *et al.* (2004), who stated that the young in the New Forest do not return to their natal area for periods of up to 20 years.

### Egg-laying, clutch size and incubation

On three occasions, first-egg dates were recorded if the nests were first visited when only one egg was present, but subsequently another was laid. On two occasions, egg-laying was captured on camera but in all other instances first-egg dates were calculated from the estimated ages of the chicks, determined by wing length (Bijlsma 1998; authors' data), and extrapolating back, using an incubation period of 32 days (range 29–34).

The earliest and latest first-egg dates were 18th May and 25th June, with a mean of 2nd



**343.** Honey-buzzard *Pernis apivorus* clutch of three eggs in an oak *Quercus robur*, Sussex, June 2006. In our study, only two nests have been located containing three eggs.

Steve Roberts

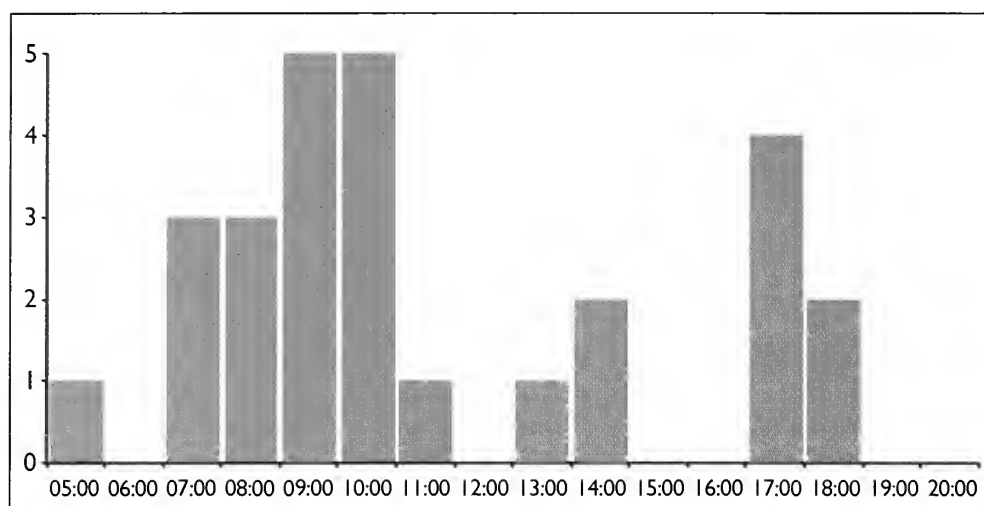
June and a standard deviation of  $\pm 7.3$  days ( $n=131$ ). Of 79 Dutch pairs, the start of egg-laying was highly synchronised, most within a 10–16 day period, but as in our study, there was a remarkable spread, from 16th May to 23rd June (Bijlsma 1986). It is worth highlighting that some pairs, from a range of geographical locations, can lay surprisingly early.

Some pairs regularly lay earlier than others, and this is generally advantageous; chicks that hatch and fledge earlier have more time to gain weight prior to migration. Early breeders are often experienced pairs that have been together for some time, and when one member of an established pair is replaced by a new bird, laying dates can become later.

Of 104 clutches, nine (8.7%) were of one egg, 93 (89.4%) were of two eggs and two (1.9%) were of three eggs.

Cameras have twice recorded a period of 32 days from first egg to hatching; another nest in North Wales contained one egg when visited on 17th June and two eggs on 19th July, one of which hatched the next day – a minimum of 33 days' incubation.

Often, during nest inspection, sitting birds are reluctant to leave the nest, sitting very tightly and often standing over the eggs and mantling whilst observers are close to the



**Fig. 5.** Times of 27 changeovers of one nesting pair of Honey-buzzards incubating a clutch of two eggs (first-egg date 21st May), between 23rd May and 21st June, 2008. Each bar represents a one-hour period beginning at the time shown.

nest. On some occasions, adults have not left the nest even when the climber is at the nest, one individual female having to be moved aside so the clutch could be counted; she then flew to a neighbouring tree and watched in silence. On flushing, adults usually fly to nearby trees and watch, some fly overhead, and others disappear. However, incubating birds quickly return to nests and there is no evidence to show that these brief visits result in subsequent failure.

Egg-laying has been recorded on camera twice. In 2007, the male arrived on the previous year's nest on 11th May, followed by the female on 21st. The first egg was laid on 30th May, but the date of the second egg is unknown. The female spent many hours at the nest before egg-laying, either adding material or false brooding, and false brooded during the day the first egg was laid. Upon arrival at the nest, the male appeared excited and inquisitive upon seeing the egg for the first time and chivvied the female to leave by peering underneath her and trying to roll the egg under him so that he could commence incubating.

In 2008, the same pair was at the same nest. The male was first seen at the nest on 9th May and the female on 19th May, though it is possible she arrived earlier as recording was not complete. The first egg was laid at about 11.45 hrs on 21st May, after the female had been at the nest for 75 minutes, feeding intermittently on a Common Frog *Rana temporaria* brought in by the male. Fifteen minutes after laying she began incubating and continued (with short breaks spent feeding at the nest) for the rest of

the day, apart from half an hour late in the afternoon when the male took over. The female incubated overnight that first night. On 22nd May at 11.25 hrs, the female left the male incubating the single egg, and returned the following day to relieve the male at 07.50 hrs (a remarkable 20 h 25 m later).

From 23rd May a routine was established, with changeovers once or twice a day. Fig. 5 shows

how these were distributed throughout the day, with peaks of activity between 07.00 and 11.00 hrs and between 17.00 and 19.00 hrs. During incubation, greenery was often brought to the nest by the returning bird.

There are some gaps in the camera data but of the 19 nights where the sitting bird was identified, the female sat for 12 nights and the male for seven (cf. *BWP*, which states that females probably sit each night). The period of incubation that included the night hours was generally prolonged, with an average time of 18 h 50 m for the female and 20 h 18 m for the male (maxima 23 h 23 m and 23 h 16 m respectively).

Two changeovers in a day, thus giving a period of incubation that did not last overnight, was recorded on eight occasions, twice with the female and six times with the male, with a mean time of 8 h 0 m (range 3 h 52 m to 12 h 53 m;  $n=8$ ). After incubation began, no food was brought to the nest by either parent until the first egg hatched.

Replacement nests after failure are rare, with only seven recorded instances. Details are limited, but replacement nests have been built at a minimum distance of 375 m and a maximum of 4.5 km from the original. Three of the nests subsequently failed, perhaps indicating problems for late-nesting birds. Two chicks were reared from two replacement nests, and one chick from each of the remaining two, all fledging in September.

One colour-ringed pair in South Wales lost two eggs in early June when the nest collapsed and built a replacement nest with two eggs 4.5 km away, in the territory of a



non-breeding pair. The first-egg date for the replacement was 26th June, and one of the two chicks fledged successfully.

### Chicks and fledging

The development of the chicks was described in detail in Roberts *et al.* (1999) but the subsequent use of nest cameras has provided new insights into their behaviour, both with the adults and between siblings. There is practically no inter-sibling rivalry when the chicks are young, but some covetous mantling of prey develops in the later stages of fledging. Chicks can feed themselves from about eight days. The way that adults share duties varies between nests. Some males undertake most of the provisioning, some pairs share duties more evenly, while females take on a large part of food provisioning at other nests.

For the nest monitored by camera during 2008 (see previous section) we know which parent brooded the chicks overnight on 15 nights during chick rearing, and on 14 of the 15 nights it was the female.

The brooding adult reacts to the close proximity of threats such as Grey Squirrels by standing and raising the wings vertically above its back and fanning the tail, all the time walking around the nest and chicks. This attempt to appear much bigger is also often deployed when the tree is climbed.

Most arrivals with food are virtually silent, with the chicks showing little indication that an adult is nearby until a few seconds before the parent alights at the nest, when the chicks stand and beg. Particularly when the young are small, this begging is accompanied by plaintive, persistent calls, though these are audible only at close range.

A disparity in the size of siblings

is often apparent, presumably linked to asynchronous hatching, although this typically has little impact upon successful fledging. In some cases, however, when there is a large disparity between chicks, this can increase during the nestling period and hinder the smaller chick's chances of success; some poorly developed chicks disappear between nest visits. One small, underdeveloped chick, which eventually fledged successfully, was later found dead on migration, still in Britain. The weight of newly hatched chicks from different nests varied considerably, from 34 g to 54 g.

Nest cameras show that chicks leave the nest and perch on surrounding branches to preen and exercise their wings for lengthy periods before returning to the nest platform. These forays into the branches of the tree become more frequent and prolonged, and eventually the chicks stray off camera. At one nest under surveillance, two chicks, aged 39 and 36 days respectively, had not branched, but by 46 and 43 days old were flying to and from the nest. We are confident that the chicks would have been capable of flight before this time, though the precise moment of first flight is unclear. This suggests an age of 40–43 days from hatching to first natural flight. Biometric data show that chicks remain in the nest with a wing length of 295 mm, corresponding to an age of 37–38 days,



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**344.** Pale-phase young Honey-buzzards *Pernis apivorus* at about five weeks old, removed from the nest to have rings fitted, Sussex, August 2006.

but are capable of erratic flight with a wing length of 300 mm or more, at an age of 38–39 days (Bijlsma 1998 and authors' data).

Honey-buzzard chicks are relatively docile and not inclined to jump from the nest prematurely, unlike Peregrine *Falco peregrinus* and Goshawk chicks. They are more akin to Red Kites *Milvus milvus* or Ospreys *Pandion haliaetus* and can be examined at an advanced age. Their normal reaction to ringers handling them is to undertake vigorous and sudden wing flaps towards the observer. If they behave in this way, they are unlikely to jump from the nest. However, from 37 days, nest visits are not advised, as birds might then jump prematurely, even though many will remain in the nest. Researchers should always be alert to chicks that are not wing-flapping but facing away from the observer. Birds that jump are invariably easily retrieved unharmed by assistants on the ground, or from low perches in nearby trees. Once returned to the nest, chicks that have jumped rarely do so again.

A number of Honey-buzzard chicks have been discovered post fledging that are either grounded (yet fit and well) or recently dead, under or near the nest. Some have fallen from poorly constructed nests, others have been grounded for no obvious reason. It is clear from nest cameras that for many weeks after fledging, chicks return to the nest plat-

form to collect prey from the adults, and there is little evidence that they receive food delivered amongst the branches of neighbouring trees, as with many other raptors. The difficulty of holding and feeding from large chunks of wasp comb on branches is probably the reason why fledged Honey-buzzards return to the nest for food, to consume the comb on the stable nest platform. If food is contested by a sibling, forcing a chick to fly with comb, it may well result in food falling to the forest floor; attempts to retrieve this might result in a grounded chick.

During the post-fledging period, chicks usually remain dependent upon their parents to supply food for some weeks, returning to the nest to be fed upon hearing the soft whistle of a parent. However, observations and satellite data have revealed that one parent can depart on migration soon after chicks have fledged, leaving the remaining parent to support the young alone. Tagged birds in the Netherlands have been recorded departing even before fledging is complete in food-poor years. At one nest in South Wales, a satellite-tagged male started his migration on 16th August, only eight days after the last chick had fledged, while the female was observed for several weeks afterwards, provisioning the chicks ([www.ecologymatters.co.uk](http://www.ecologymatters.co.uk)). This may explain post-fledging obser-

ations at breeding woods when only one adult is witnessed carrying food to the nest area. Such an early departure of one parent has been recorded in both males and females.

Fledged young are seldom seen above the canopy and spend most of their time waiting to be fed at or near the nest. Wasp nests near active Honey-buzzard nests are often left intact by the adults during the breeding season, perhaps as a resource for the



**345.** Young Honey-buzzards *Pernis apivorus* at a nest in an oak *Quercus robur* in Kent, in August 2009. These two birds are 39 days old and close to fledging.

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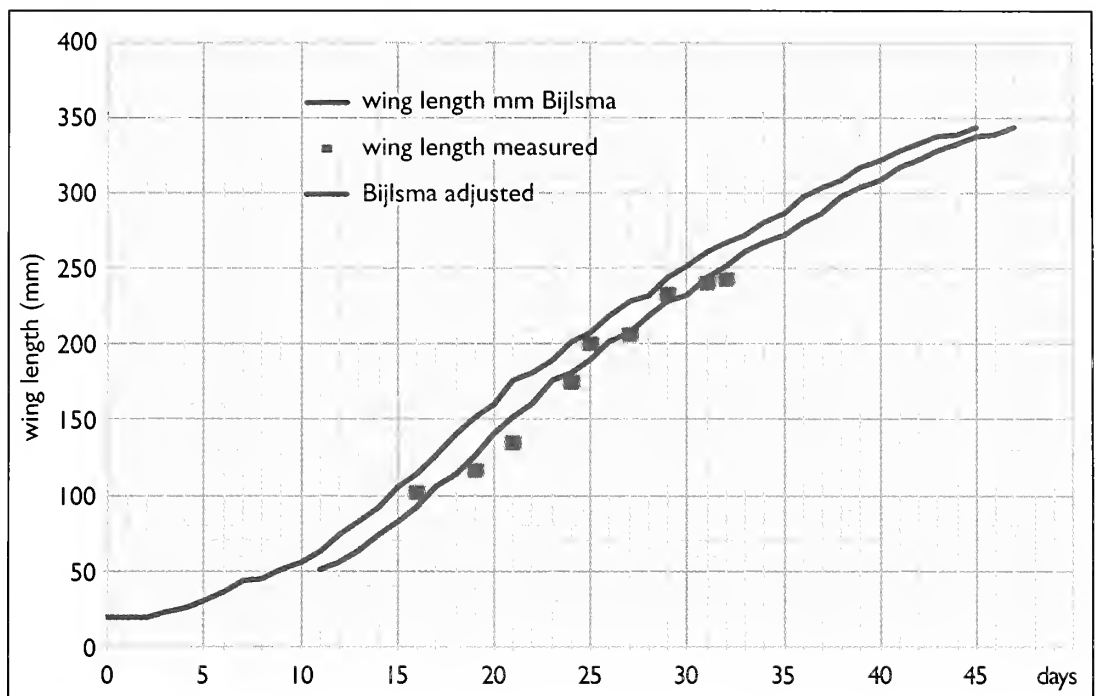
recently fledged young.

Most chicks remain within the vicinity of the nest after fledging, but two satellite-tagged chicks in Sussex revealed unusual movements ([www.roydennis.org](http://www.roydennis.org)). Both chicks remained within 10 km of the nest for the first 14 days after fledging, until around 22nd August. One chick then moved 35 km north of the nest, where it spent 18

days in a wooded area before starting its migration. Remarkably, the two chicks began migration on the same day, 23rd September, 33–35 days after fledging, and even though migrating via different routes, they arrived at their winter quarters in Ivory Coast within days of each other, and in close proximity! Thus, it cannot be assumed that young Honey-buzzards encountered in woodland in late August or early September have been reared close by. Our data show that the majority of young fledged during August (range 31st July to 7th September, mean 15th August,  $n=120$ ), assuming that fledging occurs 42 days from hatching. Results from the Netherlands are similar: the majority fledged during August, last date for fledging 4th September (Bijlsma 1986).

### Chick-age/wing-length calculations

In Roberts *et al.* (1999), egg-hatching dates were estimated from wing-length measurements published by Bijlsma (1998). Since then, our data suggest that the average rate of growth in Britain may be lower than that found by Bijlsma. Our measurements are from chicks where hatching date is known from nest cameras, or from fortuitous visits to the nest where a very young chick was found or where hatching was imminent (judged by inspection of the eggs). Measurements taken on later visits to the nest for ringing allow an



**Fig. 6.** Data on Honey-buzzard chick wing length against age in days, based on nine measurements (red squares) taken from seven individuals. Blue line shows data from Bijlsma (1998); red line shows an adjusted Bijlsma line, used in this paper; this suggests that a chick with a given wing length in Britain is two days older than that estimated from Bijlsma's data.

accurate data point for wing length against age. Nine such measurements have been made, from seven chicks in four nests (fig. 6). Chick growth rate is clearly affected by many factors and, as in other birds of prey, using wing length to estimate age is never more than an approximation.

### Diet

The staple diet of the Honey-buzzard consists of the larvae of social wasps (Vespidae) and the bird's physiology reflects this specialisation (Brown 1976; *BWP*). They forage by following worker wasps back to the nest, either in flight (85%) or from a perch (15%; Thiollay 1967), although Bijlsma (pers. comm.) found that tame birds hunted almost exclusively from a perch. Aspects of the diet of British birds were discussed by Roberts *et al.* (1999) and Roberts & Coleman (2001), but subsequent data, including an analysis of video footage and faecal samples, have added to our knowledge.

Season-long video footage of a pair of Honey-buzzards at a nest in South Wales was analysed by two different students in 2007 and 2008. The nest, in a Douglas Fir in a conifer plantation, was occupied by the same pair in both years; recording was carried out constantly from 05.00 to 21.45 hrs, six days a week throughout the breeding cycle – before the arrival of the first adult in May until



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**346.** Adult male Honey-buzzard *Pernis apivorus* feeding Common Frog *Rana temporaria* to four-week-old chick at nest in Sitka Spruce *Picea sitchensis*, South Wales, July 2000.

fledging was complete in August. In 2007, S. Thompson constructed time and activity budgets to determine a range of behavioural parameters (Thompson 2007). In 2008, John Roberts identified 169 prey items brought to the chicks in over 397 hours of footage, covering the whole nestling/fledging period (Roberts 2009a). He also analysed faecal samples from three nests in Sussex, one in Surrey, one in Kent and two in South Wales, collected from multiple visits during the nestling period.

Roberts' analysis confirmed that wasps dominated the diet, forming over 75% of all food items brought in to the nest (cf. Gamauf 1999, who found that wasps formed 82% of 404 items brought to 52 nests in Germany). Since the summer of 2008 was particularly wet

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**347.** Nest-cam shot of a male Honey-buzzard *Pernis apivorus* provisioning the female and chicks with wasp comb at a nest in Sitka Spruce *Picea sitchensis*, South Wales, July 2011.

([www.metoffice.gov.uk](http://www.metoffice.gov.uk)), this supports the suggestion that poor weather does not affect the Honey-buzzard's ability to forage, or at least not sufficiently to have an impact on breeding success (Bijlsma 2002). Common Wasp *Vespa vulgaris* and other wasp species can be distinguished on video footage by the colour and structure of the comb (Spradbery 1973).

At the South Wales nest in 2008, 53% of wasp prey was Common Wasp and 47% other species. Faecal analysis showed that among the other species, Red Wasp *Vespula rufa* was prolific, with Norwegian Wasp *Dolichovespula norvegica*, German Wasp *V. germanica* and Hornet *Vespa crabro* in smaller amounts.

The faecal samples also suggested that Honey-buzzards may favour accessibility over availability when it comes to wasps, given the preference for Red Wasp (shallow nesting) and Norwegian Wasp (vegetation nesting) over the much more common, yet deep-nesting German Wasp. Video analysis also suggested that different wasp species were preferred at different points of the breeding cycle. 'Other' species comprised the bulk of vespine prey during the first four weeks after the chicks hatched,

before being replaced almost completely by Common Wasp – even though Common Wasp is abundant throughout the whole fledging cycle. Parnell (1997) reported similar results. Roberts *et al.* (1999) suggested that Honey-buzzards might target other species earlier in the fledging period, to allow the Common Wasp nests to reach maturity and provide more ample food supplies when nests contain large chicks

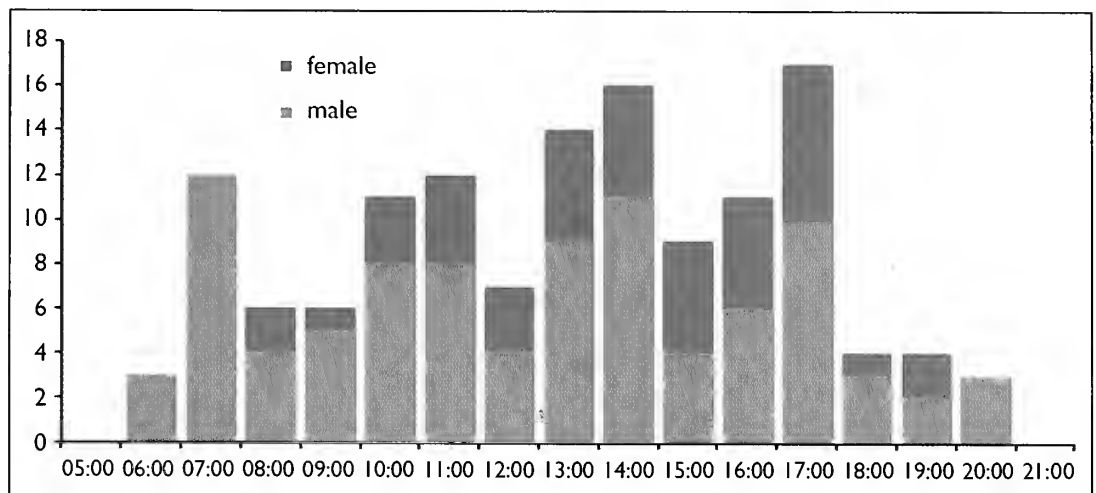
and during the post-fledging period. Common Wasp nests can attain a much greater size than those of many other wasp species, if left to mature (Zahradnik 1998). The faecal analysis appears to support this theory.

Roberts (2009a) also found that Common Frogs played a crucial role in chick diet up to four weeks, before being replaced by wasps. In total, vertebrate prey made up 25% of prey items over the eight-week nestling period in 2008, almost all (97%) of which was Common Frog; see also Roberts & Coleman (2001).

Frogs are also widely used by displaying adults in May, when wing-clapping or circling birds are often witnessed carrying frogs, which dangle obviously from the talons and may serve to advertise a bird's qualities as a good food provider. Wasp comb is very small and in short supply in May. Chicks are usually fed by an adult for at least four weeks, often longer, the female regularly feeding chicks with food delivered by the male. Compared with comb, frogs are difficult for chicks to handle, since they are usually delivered alive, and may escape if not dismembered by an adult and fed to the chick. One male was recorded making three deliveries of frogs in four hours and all escaped after the chicks failed to deal with them. The only food consumed during that period was from wasp comb delivered by the female.

Adults can forage widely for food. A satellite-tagged female in North Wales regularly travelled to a different forest, 14 km from the nest, although a satellite-tagged male in South Wales foraged mainly within a few kilometres of the nest in the later stages of fledging. Foraging distance is likely to depend on weather conditions and food abundance.

The time/activity budget analysis confirmed that wasps dominated chick diet (86% of recorded items brought to the nest) and



**Fig. 7.** Food provisioning by male and female parents at a Honey-buzzard nest in South Wales in 2008; 135 separate food items are shown here where the parent was identified, throughout the chick-rearing period. Each bar represents a one-hour period beginning at the time shown.

that the Common Frog was the main vertebrate prey (Thompson 2007). Thompson's analysis showed that during the first three weeks there was a feeding bias towards the elder chick, which received an average of 65 wasp grubs per feeding session, compared with 44 for the younger and smaller chick. Measured on a visit to the nest, these chicks, 27 and 22 days old, weighed 745 g and 450 g respectively. At the same nest the following year, 20- and 17-day-old chicks weighed 460 g and 380 g, yet at 33 and 30 days old weighed 805 g and 870 g respectively. There was, however, little competition between the chicks until the final two weeks of fledging, when chicks would lunge for prey upon arrival of an adult and mantle possessively.

Nest cameras showed that males tend to provide more food than the females, though at some nests males take a large share of brooding duties, and some females provide large amounts of food later in the fledging cycle. In 2008, of 135 items brought in where the parent was identified, the male contributed 92 (68.1%) and the female 43 (31.9%) (Roberts 2009a). Fig. 7 shows the diurnal pattern of food deliveries.

### Breeding success and failure

Roberts *et al.* (1999) suggested that breeding success of Honey-buzzards in Britain is good, with productivity of 1.66 young fledged per pair from nests found with eggs ( $n=15$ ), and 1.61 young from all nests found ( $n=47$ ). Long-term data from Hampshire show similarly good success rates (Wiseman 2012; A. Page *in litt.*).



**348.** Adult male Honey-buzzard *Pernis apivorus* at nest in Sitka Spruce *Picea sitchensis*, South Wales, August 2013. This bird was breeding within 4.5 km of its natal site.

The much larger sample now available shows productivity of 1.33 young per pair for nests found with eggs ( $n=104$ ) and 1.29 young per pair for all nests ( $n=364$ ). In the Netherlands, Bijlsma (1986) reported 104 young fledged from 90 pairs, 1.16 young/pair or 1.44 young/successful pair. The data from nest cameras, showing copious amounts of wasp comb and frogs delivered to chicks across a wide geographical range of breeding sites, suggest that neither food availability nor breeding success explains the Honey-buzzard's scarcity in Britain.

In terms of breeding failure, just 42 of the 364 nests (11.5%) failed. Few nests found at the egg stage failed before hatching: 87 of 104 (84%) hatched successfully. The reasons for failure at the egg stage are not always clear, but usually occurred very early in the cycle, either during laying or soon after (as found by Bijlsma 1999). Some nests failed before inspection, with eggshells found beneath the nest; in a few instances poor nest construction (notably too much greenery) was considered a factor. On one occasion the remains of the female, which had been shot, were found beneath the nest; on other occasions, early egg loss was attributed to interference

from intruding (presumed unmated) Honey-buzzards; such intruders have been observed destroying eggs in France (M. Hinge pers. comm.).

The potential impact of nest recording and research on breeding failure has been discussed, and both Colin Tubbs (in Gibbons *et al.* 1993) and E. J. Wiseman (Wiseman 2012) have suggested that disturbance and nest visits may influence potential breeding failures. Concerns about the possible impact of disturbance have held back Honey-buzzard research for many years. Since the late 1990s, however, there has been plenty of evidence to demonstrate that Honey-buzzards are no more sensitive to disturbance at the nest than other raptors; in fact, they have proved to be more tolerant than other species (see Roberts *et al.* 1999, Bijlsma 1999 and Gamauf 2013). Bijlsma made comparative studies of the impact of nest visits upon breeding success, and his data show that nests visited for research purposes actually enjoy better breeding success than nest trees that were not climbed (table 3). Some nests were visited twice daily during the nestling stage to gather comprehensive data (up to 62 visits per nest). In addition, nest cameras clearly



show that chicks settle very quickly in the nest after being ringed, normally sitting up and preening within a few minutes of a climber's departure. Likewise, adults typically return to the nest and continue to brood or feed young with no indication of any distress.

Nest cameras reveal some of the reasons for failure. For example, at one Welsh nest, on the day that the first chick hatched, the female raised herself from the tiny chick a few hours after it had hatched, and turned around on the nest. The cameras show that a strong gust of wind lifted the adult's tail, bowling her and the chick out of the nest. The startled adult returned within a minute and settled upon the remaining egg. When the chick hatched from that second egg and was 12 days old, the brooding female was intimidated to leave it by an adult female Goshawk, which promptly killed the young bird and proceeded to pluck and eat it on the nest, remaining on the nest for fully 40 minutes.

Goshawks are certainly a problem for Honey-buzzards, perhaps more so in areas such as Wales where the Goshawk population is high, and finding breeding areas away from Goshawks is almost impossible. We now have two confirmed and two suspected instances of Goshawks killing Honey-buzzard chicks either in the nest or when very recently fledged. The second confirmed record was of an adult female Goshawk, observed by SJR, which killed and consumed a recently fledged chick under the nest tree. An adult female Honey-buzzard at a Sussex nest containing eggs was killed on the nest and found freshly dead below. Subsequent examination of the wounds on the carcass showed that a Goshawk was the only possible culprit. Similar problems with Goshawks are apparent in the Netherlands (for details, see Bijlsma 1999, 2004). It may be only a matter of time before increasing Goshawk populations in areas such as the New Forest begin to have some impact on breeding Honey-buzzards.

Weather is not usually a major factor in nest success or failure, and Honey-buzzards generally cope remarkably well with British

**Table 3.** The impact of nest visits on breeding success of Honey-buzzards (data from Bijlsma 1999).

Number of nest visits	Successful	Failed	% Failed
0	43	15	25.9
1–2	93	25	21.2
3–5	74	2	2.6
>5	13	0	0.0

**Table 4.** Factors associated with or implicated in 42 cases of breeding failure in Honey-buzzards in our study, where known.

	Number of failed breeding attempts
Eggs failed to hatch	6
Adverse weather	5
Robbed (by humans)	5
Predation (mainly Goshawk)	6
Persecution by man	3
Interference from other Honey-buzzards	3
Poor nest construction	3
Unknown	11

weather conditions (Spradbery 1973; Roberts *et al.* 1999). However, the record-breaking, prolonged rainfall and low temperatures of summer 2012 led to widespread failure. In a sample of monitored nests, only four of 23 regular breeding pairs that were occupying their usual territories in May were successful (singles in Kent and Sussex, two in Hampshire). For the remaining 19 pairs, no adults were seen carrying food, suggesting that most failed before the eggs hatched. Of the nests that were examined, some birds had not laid, but most contained broken eggs, abandoned during incubation, presumably chiefly as a result of wasp numbers being so low. Surprisingly, the four successful nests in 2012 contained healthy chicks that were of normal weight or even heavier than average. A nest camera in Hampshire revealed copious wasp comb being delivered to the chicks; one possible explanation for this anomaly is that, in the absence of competition from neighbouring pairs, adults had access to a much greater area for foraging. In this case, the male was observed travelling 8 km or more from the nest. Elsewhere, work in Germany and the Netherlands shows that when weather is severe enough to affect prey availability, very few nests succeed (Kostrzewa 1989; Bijlsma *et al.* 1997).

Other known reasons for the demise of

chicks include choking on a frog's head, by a four-week-old chick; the collapse of poorly constructed nests; and poor or inexperienced parents that fail to provide sufficient food during the chick-rearing period. In one late nest a chick was abandoned. Table 4 summarises the reasons, where known or judged with a high degree of probability, for the 42 cases of breeding failure in our study.

## Population

Given that Honey-buzzards breed successfully in a huge range of woodland types, and at a range of altitudes, from Highland to Dorset, and from Caernarfonshire to Norfolk, what limits their abundance? The species has been recorded in suitable breeding habitat in 34 counties with breeding confirmed in 24 (RBBP and authors' data). Although undoubtedly under-recorded, the species is genuinely scarce. There have, however, been significant increases in population and range in the last 20 years, notably in Sussex and Surrey, Wales and Scotland (Roberts & Lewis 2003), while many fieldworkers believe that large areas of the country are poorly surveyed for Honey-buzzards and that published breeding totals are probably greatly underestimated. If the slow but steady increase continues and new areas are surveyed diligently, a far different picture may begin to emerge.

Estimating the breeding population of Honey-buzzards in Britain has always been difficult. Since 2000, the maximum number of potential breeders given by RBBP is 78 (109, if single birds in suitable habitat are included), of which up to 53 were confirmed (RBBP data, Mark Holling *in litt.*). The national survey in 2000 (Ogilvie *et al.* 2002) gave a total of 30 confirmed pairs, and a maximum total of 51 pairs. Roberts & Lewis (2003) suggested that the total might be in the region of 100–150 pairs, which we believe is still the most realistic estimate.

In practice, the difficulties of surveying this species mean that a conventional survey is likely to produce a gross underestimate. Surveying Honey-buzzards is enormously time intensive, and the remote nature of many upland areas combined with the need for fieldworkers to have previous experience of the species create near-impossible condi-

tions for the organisers of any national survey. An approach that considers current breeding densities in well-studied areas, and (with appropriate caution) extrapolates this to a wider area using what we know about the habitats utilised by this species, may be more successful. Clearly there are large areas of apparently excellent breeding habitat that remain unsurveyed (for example the Forest of Dean in Gloucestershire and some of the conifer plantations of the Welsh Marches). Brian Etheridge (pers. comm.) considers that the likely Scottish population could be as high as 50 pairs, even though this is higher than the typical national figure of confirmed breeding pairs. Honey-buzzards were seen in suitable breeding habitat in spring/summer in six different Scottish counties in 2009 (Ken Shaw pers. comm.), some of which were in areas not previously recorded by, or known to, the RBBP. It seems that whenever dedicated enthusiasts concentrate upon this species, either real increases are evident or overlooked breeding birds are discovered. There were no published records of Honey-buzzards breeding in Sussex and Surrey before 1990, but by 2010 there was confirmed evidence of nine pairs, and signs of additional pairs for which the nests remained undetected (Malcolm Cowlard pers. comm.). A similar situation exists in Wales, where there were no confirmed breeding records before 1990 but in 2006 six nests were found and breeding was suspected or confirmed in six counties.

The recent figures appear to demonstrate a combination of a recent population increase (supported by the good breeding success of many British birds) and the under-recording of a secretive species. Intriguingly, the areas in which some pairs have been 'discovered' in recent years prove to be (perhaps not surprisingly) close to very old historical sites. For example, Holloway (1996) showed that there were several breeding records in Shropshire before 1900, perhaps suggesting a long, if not continuous, history in the area, possibly masked by a long period of undetected breeding. However, our own fieldwork and co-operation with others shows that many apparently suitable areas do not contain breeding Honey-buzzards, for reasons that remain unclear.

There is good evidence that in parts of its European breeding range the Honey-buzzard is in decline (e.g. Tjernberg & Rytman 1994, Cösters *et al.* 2000, Bijlsma 2006, Björklund *et al.* 2008, Mammen & Stubbe 2009). Bijlsma *et al.* (2012) considered that this decline may be, at least in part, due to low adult survival rates. In Britain, the data gathered from colour-ringing and the use of nest cameras to identify individuals over a period of years could, in principle, allow estimates of adult survival rate, but that would require a major long-term commitment to intensive survey work.

### Ringling and tracking of British Honey-buzzards

Recent satellite-tracking and colour-ringing projects have revealed exciting insights into the migration, wintering and subsequent breeding locations of British-reared Honey-buzzards. During a nest-monitoring and ringing programme in Scotland between 1978 and 1995, a total of 54 chicks were ringed (Brian Etheridge pers. comm.). Following the discovery of birds breeding in Wales in 1992, some 81 birds have now been ringed in the principality, while work in Surrey, Sussex and Kent since 1997 has resulted in a further 126 chicks being ringed there (M. Cowlard pers. comm.).

There are several notable ringing recoveries. A chick from a nest in North Wales was found injured in Winchester, Hampshire, on 19th October 1995 (a very late date for this species still to be in Britain). Five have been killed or found dead on the wintering grounds – in Guinea in February 1991 (from a 1986 Scottish nest); in Ghana in February 2001 (from a 2000 Welsh nest) and in mid May 2009 (from a 2007 Sussex nest); in Sierra Leone in January 2013 (from a 2007 Sussex nest); and in Liberia in April 2014 (from a 2005 Welsh nest). The exact date of the May 2009 record is not known but most migrants would normally have started their migration long before May; this might suggest that not all two-year-old birds leave their African wintering areas (see below). Four other birds



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**349.** Nest-cam shot of 'Green 4', a female Honey-buzzard *Pernis apivorus* at a nest in a Sitka Spruce *Picea sitchensis*, South Wales, July 2011. This female was known to be 12 years old in the year of her last breeding attempt, the oldest-breeding Honey-buzzard recorded in Britain.

have been found in France: in Manche in August 2003 (from a 1998 Shropshire nest); and in Seine-Maritime in August 2007, Seine-et-Oise & Seine in July 2012 and Haute-Garonne in June 2012 – all from Sussex nests, in 2003, 2009 and 2010 respectively (Clark *et al.* 2002, 2004, 2010; Coiffait *et al.* 2008). The ages of the two birds recovered in 2012 suggests that they may not have reached breeding age, and were probably exploring potential breeding areas. The birds recovered in 2003 and 2007 might well have been part of a breeding population, but the recovery information was not sufficiently detailed to tell us more.

Between 2001 and 2011, 11 chicks fitted with satellite tags have provided information about their migration: nine from nests in Scotland, and two from a Sussex nest ([www.roydennis.org](http://www.roydennis.org)). In general, chicks started their migration (sometimes following an exploratory phase away from the natal area), in early to mid September (earliest 25th August, latest 23rd September). Despite some early setbacks (two Scottish chicks were lost in the Atlantic), the majority were successfully tracked to Africa, arriving in late September or early October (earliest 17th September, latest 14th October), before some signals failed. One bird arrived in Ghana just four weeks after leaving its natal area in Scotland. The routes generally took a path through France and Spain, though two birds took a more westerly route, apparently crossing the Bay of Biscay, and one a more easterly route via Germany and Switzerland.



All birds entered northwest Africa in Morocco/Algeria and continued south through Mauritania/Mali, and onward into Guinea, Liberia, Ghana and Nigeria. Two birds interrupted their migrations for a while in Guinea and Mali in October–November before moving on. Four birds were tracked to their wintering areas, in Nigeria (two), coastal Liberia and Cameroon. Two transmitters continued to function for at least 12 months. One bird, wintering in Nigeria, moved to Ghana in early February, then Ivory Coast and Liberia where it remained until mid October in its second calendar-year, before moving around Liberia and Guinea during its second winter. The second bird remained on its wintering grounds in Cameroon throughout the spring and summer of its second calendar-year, before its signal failed.

Three adult Honey-buzzards have been satellite tracked, a male from Scotland in 2002 ([www.roydennis.org](http://www.roydennis.org)), and in 2008 a male from South Wales and a female from North Wales ([www.ecologymatters.co.uk](http://www.ecologymatters.co.uk)). The basic route taken by all three birds was consistent, although the timing of the journey varied. The Scottish bird left the breeding area on 5th September, passing south through central England and into France by 11th. He crossed eastern Spain and arrived in Morocco on 20th September. In early October he had crossed the Sahara and arrived in Ghana, when he continued south and east before reaching the coastal woodlands of Gabon by late October. The South Wales male crossed the English Channel near Hastings on 23rd August, and the Strait of Gibraltar on 31st. He passed through Morocco, Algeria, Mauritania and Mali to reach Guinea on 11th September, where he remained until 16th November before moving through Liberia to the Ivory Coast. The North Wales female is the first bird to be tracked over four migrations. She left the breeding site on 28th August 2008, passing through Kent, France and Spain to reach Morocco on 19th September. She continued through Algeria, Mali and Mauritania to reach the Ivory Coast on 6th October, remaining there until 18th April. On her return migration in spring 2009, she crossed into Mali on about 5th May, continued through Mauritania, Algeria and Morocco to

cross into Spain on 15th–16th and France on 17th–18th. She arrived at her breeding site later than normal to find it already occupied, and failed to breed. She spent the summer moving around the general nesting area, and left North Wales on 17th August and followed a similar route to her previous migration, through France and Spain to arrive in Morocco on 1st September. She continued onward through Algeria, Mauritania and Mali before arriving in the Ivory Coast on 14th, where she wintered. On 2nd May, she started her northward migration again, via Mauritania, Algeria and Morocco, crossing into Spain on 13th May. On 23rd May she was near Cherbourg, and on 24th there was a signal from the Solent. A signal continued to be received from that area until 28th May.

A colour-ringing project has operated in Britain since 1997, and 240 chicks had been colour-ringed up to 2013: 78 in Wales; 125 in Sussex, Surrey and Kent; with smaller numbers in Scotland, Nottinghamshire, Shropshire, Dorset and Hampshire. In total, there are now 16 cases where colour-ringed birds have subsequently been found breeding, involving eight individuals. Two males were first recorded breeding when three years old, one at four and another at six years old. A fifth was first captured on camera in his tenth year (the ring was seen but the code not identified a year earlier), and was presumably missed in earlier breeding seasons. Females were first recorded breeding at five and six years; the latter was recognised from distinctive plumage as being present on the breeding grounds (though not breeding) in her fourth and fifth years (Roberts & Lewis 2008). Another newly recorded female with a blue (Welsh) colour ring has not yet been positively identified. The oldest females were seven and 12 years old (the latter is a new British longevity record), the oldest males six and 12 years old.

Movements between natal and breeding site were 22 km and 100 km for two females and a mean of 28 km (range 4–140 km) for five males. The smallest movements between natal and breeding sites are 4.0 and 4.5 km, and both involve males.

Five colour-ringed birds have been seen in more than one breeding season (two females and three males). Although the data are

limited, their movements suggest that both sexes generally return to the same nesting area in subsequent breeding seasons, with four of the five moving no more than 4 km. The fifth, a female, hatched in 2005, first bred 22 km from the natal site in 2010, moved 2 km in 2012, and then 15.5 km in 2013, to a site just 8.5 km from the natal territory.

## Discussion

With much more data, we have been able to reinforce many of the findings presented in Roberts *et al.* (1999). Greater co-operation between researchers has fostered a much better understanding of the range and habitats that Honey-buzzards occupy in Britain, showing that the species is much more widespread than considered previously. Modern technology has proved invaluable. Nest cameras have been a revelation in opening up the secrets of behaviour at the nest, affording a vast amount of recorded data, previously difficult to obtain. The colour-ringing scheme has helped to shed light on many aspects of Honey-buzzard breeding dynamics and satellite tracking has provided detailed information on migration and the foraging habits of breeding birds. This is one area that requires further research to establish the relative importance of different habitat types for breeding birds.

Other aspects of Honey-buzzard breeding biology are still poorly understood and would benefit from further research. These include the behaviour of the off-duty bird during incubation, since it is strongly suspected that off-duty birds use this time to locate developing wasp nests to exploit later, when the eggs have hatched. The intriguing suggestion that Honey-buzzards 'manage' or 'farm' wasp nests would be fascinating to explore fully, using modern tracking technology. The success or otherwise of pairs in adverse conditions may be related to the maturity and experience of the pair, but this needs further work.

Population estimates remain difficult, and opinions vary among fieldworkers. All views may have some validity and should not be discounted casually. Proven breeding numbers cannot be challenged but, for this and similar species, which are scarce and secretive and nest in remote areas, popula-

tion estimates using only confirmed records are bound to be significant underestimates. Although the population appears to be increasing, it remains an enigma why numbers remain relatively low. Concerns that nest visits and disturbance related to research and monitoring are detrimental to breeding success have been dispelled and, as in Europe, we need more effort in research and monitoring of our breeding birds across the whole country. One concern related to that, however, is the limited pool of enthusiasts and expertise across the country. Bringing the Honey-buzzard to a wider group of enthusiasts would ultimately benefit the bird. But succession proves difficult with this sometimes elusive and often exasperating species – 'too much effort for too little reward'. And, sadly, too few people are willing to put in the large investment of time needed to study this species by finding breeding pairs and then undertaking painstaking research.

Back in 1999, we could not have foreseen the rapid rise in developments such as wind-farms and gas drilling in areas used by Honey-buzzards. Such developments reinforce the need for research and understanding, so that conservationists are armed with sufficient knowledge to provide sound advice in managing these issues. Recently, at one site in Britain where secrecy about the local Honey-buzzards was carefully maintained, a windfarm development was approved close to an active nest because the local planning authority had no knowledge of the nest site. There is a balance to be struck between secrecy and disclosure based on commonsense and local expertise. Blanket secrecy, perhaps admirable in the past, does nothing to serve the Honey-buzzard's interests in the twenty-first century.

The authors have enjoyed a huge surge of openness and discourse from researchers and enthusiasts across much of the country, which has contributed in no small part to the comprehensiveness of this paper. Long may it continue.

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Steve Roberts

# The uppertail-covert pattern of ‘Stejneger’s Stonechat’

Magnus Hellström and Gabriel Norevik

**Abstract** Migrant Siberian Stonechats *Saxicola maurus* trapped for ringing at Beidaihe, China, in spring 2011 and autumn 2013, revealed the presence of dark spotting on the uppertail-coverts of c. 60% of first-winter and adult birds. The markings were found more often in males than females. Siberian Stonechats are generally considered to show an unmarked rump and uppertail-coverts, whereas dark spotting is characteristic of European Stonechat *S. rubicola*. The frequency and size of uppertail-covert spotting is examined, and implications for identification are reviewed, in particular the separation of *stejnegeri* from the nominate race *maurus*.

Siberian Stonechat *Saxicola maurus* is a polytypic species comprising six races (*maurus*, *variegatus*, *armenicus*, *indicus*, *stejnegeri* and *przewalskii*) and is distributed over much of the Eastern Palearctic. The species is a vagrant to western Europe and the two races breeding in the north, *maurus* and *stejnegeri*, have long been thought to occur, while male *variegatus* has also reached Britain and other north European countries on several occasions.

Separation of *maurus* and *stejnegeri*,

particularly in female, immature and adult non-breeding plumages, is still in its infancy (see Hudson *et al.* 2014). It has, not unreasonably, been assumed that the more westerly distributed *maurus* is the predominant taxon involved in European records, although a few *stejnegeri* have been suspected over the years. The first acceptable records of *stejnegeri* (‘Stejneger’s Stonechat’) for western Europe are, as far as we are aware, a bird on Texel, the Netherlands, later relocated at Portland,

Magnus Hellström



**350.** Adult (2CY+) male ‘Stejneger’s Stonechat’ *Saxicola maurus stejnegeri*, Beidaihe, China, September 2012. A rich and saturated plumage and a (variably) broad-based appearance to the bill gives the average autumn *stejnegeri* a subtly different impression from that of the generally paler nominate *maurus*.

Dorset, in October 2012 (*Brit. Birds* 107: 636–637); and another at Orivesi, Pappilanniemi, Finland, in November 2013. In both cases the identification was supported by genetic analysis (Stervander *et al.* in prep.). A third bird, ringed and later found dead at Landsort, Sweden, in October 2008, has also been identified as *stejnegeri* following preliminary DNA analysis (Martin Irestedt *in litt.*). As our understanding of the complexities of Siberian Stonechat identification improves, it is likely that other records of *stejnegeri* will come to light.

## General characteristics

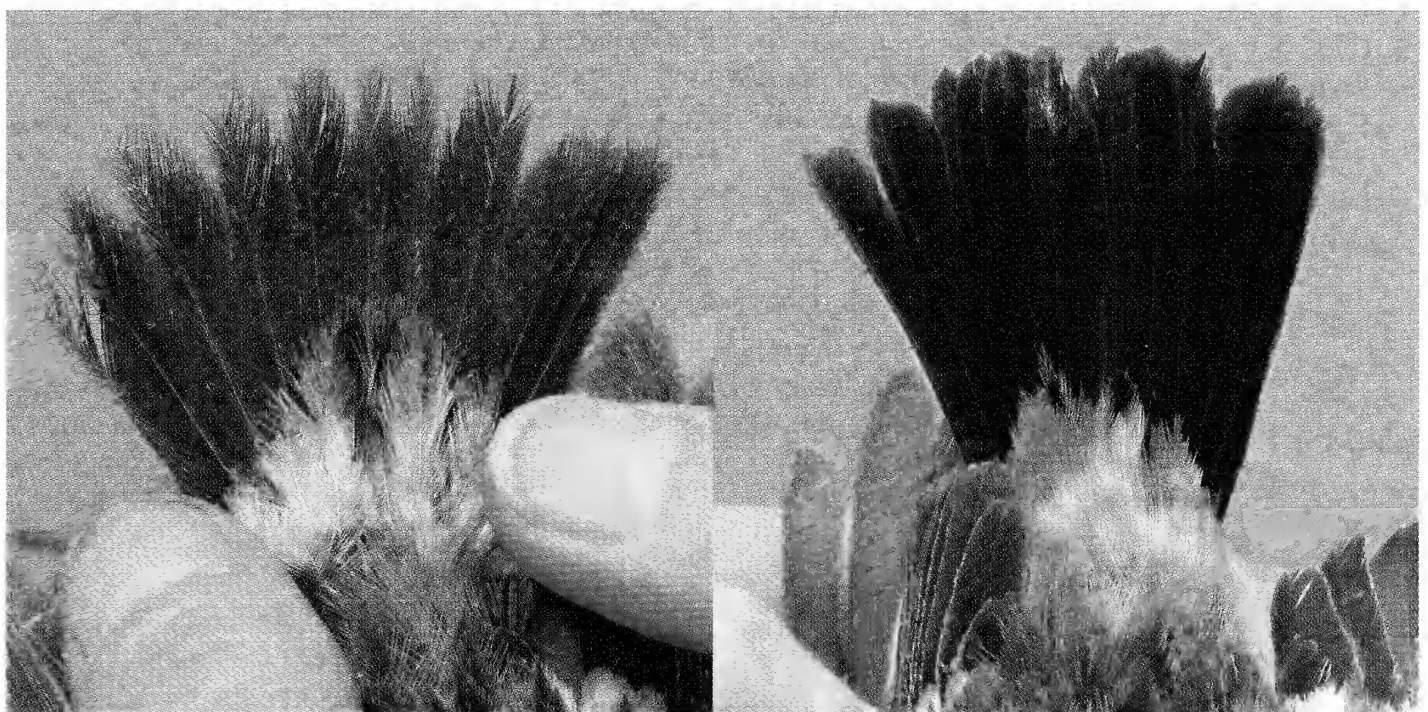
The plumage of Siberian Stonechat differs from that of European Stonechat *S. rubicola* in several respects (see for example Svensson 1992, Urquhart 2002, Hellström & Wærn 2011). Key identification characters for Siberian Stonechat – the black axillaries and underwing-coverts in adult males, and unstreaked rump and uppertail-coverts in all individuals – have historically been thought to apply to all races, and these separate them from European Stonechats, with their paler, grey underwing-coverts and dark-streaked rump and uppertail-coverts. Differences between nominate *maurus* and *stejnegeri* are slight; most importantly, spring male *stejnegeri* generally shows a slightly smaller white rump area, more restricted white neck patches and, on average, a broader bill than

*maurus* (Svensson 1992 gave bill width of 4.7–5.7 mm at proximal edge of nostril for *stejnegeri*, 4.0–4.9 mm for *maurus*).

## Observations of 'Stejneger's Stonechats' at Beidaihe

As part of a newly established co-operation between the bird ringing centres in Stockholm and Beijing (the Swedish–Chinese Bird Banding Exchange Project), a small team from Sweden, including MH, were involved with the organisation of bird ringing courses for Chinese ringers in Beidaihe, Hebei province, in northeast China, during the first half of May 2011. Migrating Siberian Stonechats were abundant in the area. The overall impression of these birds was quite different from nominate *maurus* previously studied in central and western Siberia; many males appeared somewhat uniform, typically with a small white rump and neck patches as well as being extensively washed rufous on the belly and flanks. In the field, at a distance, they actually appeared rather more similar to European Stonechats than to *maurus*. The females also appeared dark, and only one individual (of many examples) showed whitish feathers in the rump – an ochre-rufous colour was the norm.

During May 2011, 16 Siberian Stonechats were trapped and examined in the hand. Of these, four birds (both males and females) showed dark markings in the uppertail-



Magnus Hellström

**351.** Two 'Stejneger's Stonechats' *Saxicola maurus stejnegeri* at Beidaihe, May 2011. Both show dark markings in the uppertail-coverts. The two longest uppertail-coverts in the left-hand bird show extremely bold and large markings, covering a large proportion of the feather.



coverts (see plate 351), which contradicts published descriptions of *stejnegeri*. The markings varied considerably between the individuals, partly as a result of moult and wear, but primarily because of extensive individual variation. In two of the four birds, these dark markings were extremely bold and covered much of the feather in question. Similar patterning of the uppertail-coverts was again observed in a handful of birds at Beidaihe during September and October 2012 by MH and GN, both in the field and in the hand, but unfortunately it was not possible to arrange targeted trapping there during that period. In autumn 2013, however, the trapping programme began on 24th August and continued to 15th November. The permissible trapping area then included a rice field, which attracted numerous Siberian Stonechats, and a total of 225 individuals were examined and documented by GN. These were considered to be a representative sample of the Siberian Stonechats passing through Beidaihe during autumn migration.

Evaluating the uppertail-covert pattern

In order to describe the variation in the pattern of the uppertail-coverts objectively, we attempted to classify all the trapped birds. The longest pair of uppertail-coverts was the key to this classification; many individuals showed the dark markings in these feathers only. However, of 27 first-year birds caught in autumn 2013 carrying only unmoulted juvenile uppertail-coverts, none showed dark markings to these feathers, while two birds with two generations of uppertail-coverts showed extensively marked post-juvenile and unmarked juvenile feathers (see plate 353). These observations suggest that juvenile uppertail-coverts are generally, perhaps always, unmarked. Consequently, we omitted 29 birds from our sample that had retained juvenile longest uppertail-coverts, plus any that (for whatever reason) lacked these feathers. The remaining birds were classified into one of three pre-defined categories to describe the intensity of the markings:

- class 0 – clean uppertail-coverts with no darker pattern
- class 1 – at least one uppertail-covert with dark feather shaft, often with a narrow,

**Table 1.** Intensity of uppertail-covert markings in ‘Stejneger’s Stonechats’ *Saxicola maurus stejnegeri*, trapped at Beidaihe, China, autumn 2013.

	n	class 0	class 1	class 2
all birds	196	40%	35%	25%
all males	109	44%	21%	35%
all females	87	40%	34%	26%
all adults	76	40%	34%	26%
adult males	43	46%	26%	28%
adult females	33	30%	46%	24%
all 1CYs	120	41%	36%	23%
1CY males	66	43%	18%	39%
1CY females	54	39%	57%	4%

**Table 2.** Combined class and subclass of the uppertail-covert pattern of ‘Stejneger’s Stonechats’ *Saxicola maurus stejnegeri*, trapped at Beidaihe, China, autumn 2013.

males			females		
subclass	A	B	subclass	A	B
class 1	3	20	class 1	14	32
class 2	9	29	class 2	10	0

diffuse area of darker (greyish) colour on the vanes adjacent to the feather shaft

- class 2 – at least one uppertail-covert with dark feather shaft and black or blackish marking in the vanes, varying in size from rather small to large

In addition, we logged the *position* of the markings on the feather according to the following subclasses:

- subclass A – dark marking mainly on the proximal half of the feather
- subclass B – dark marking mainly on (or reaching) the distal half of the feather

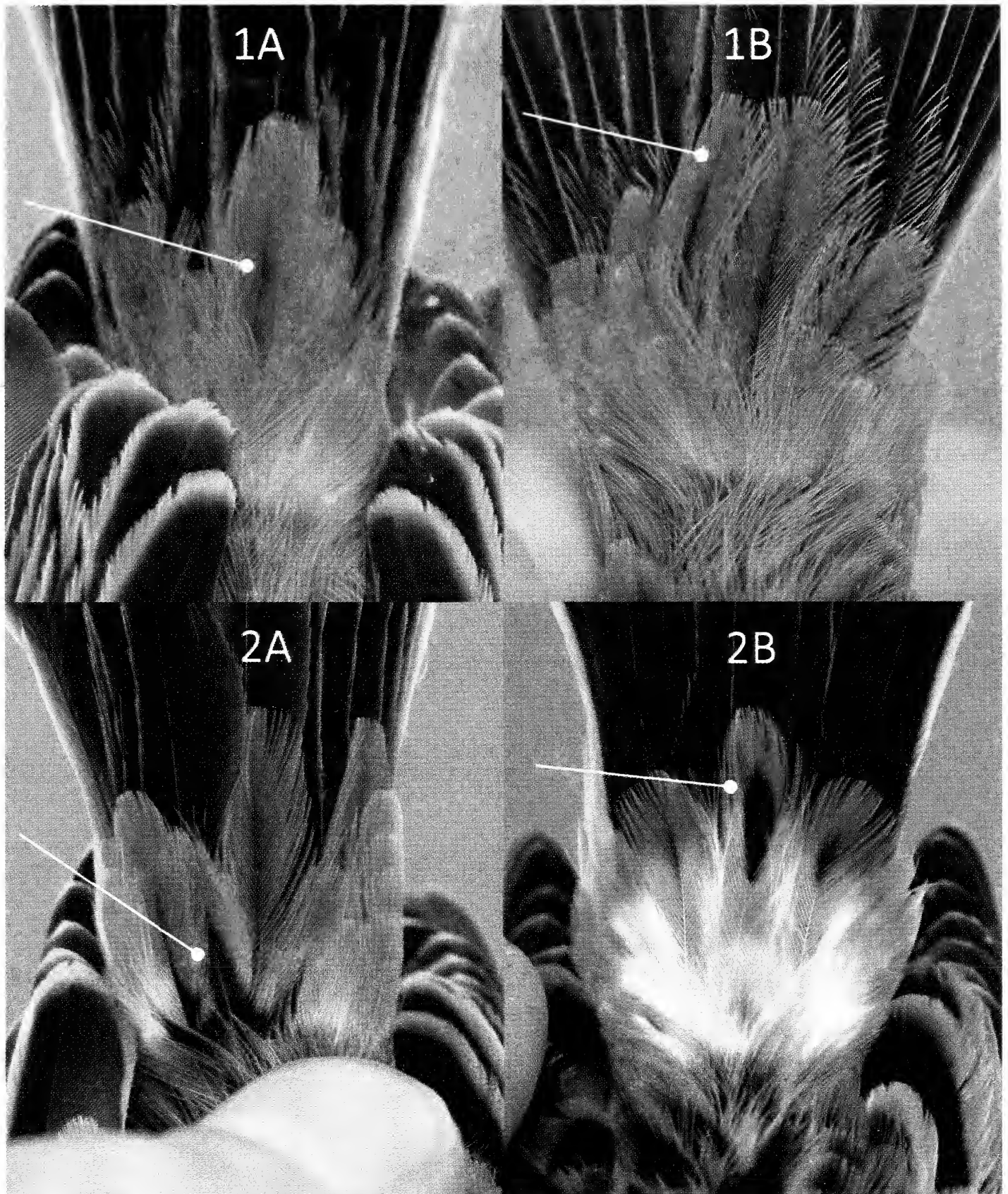
The results are presented in tables 1 and 2. Overall, class 1 or 2 markings were present in c. 60% of the birds we handled (excluding those with retained juvenile longest uppertail-coverts). Dark markings in the uppertail-coverts seemed to be found more commonly in males, and males also tended to have the markings concentrated on the distal parts of the feather more frequently than females, making them more readily seen, both in the field and in the hand.

The patterning of the uppertail-coverts described here may superficially resemble that found in European Stonechats, but generally differs in several key respects. The

single dark markings are highly variable and irregular in terms of size, shape and position on the feather. In fresh plumage it may be necessary to remove overlying feathers in order to see this marking. A few birds show truly bold markings – much larger than ever found in European Stonechat. Furthermore, the number of dark-marked uppertail-coverts is generally lower than in European birds, and the markings may also be unevenly

distributed across the feather tract. However, a few individuals showed markings that probably would be difficult to separate from the typical pattern of European Stonechat, especially when worn.

In spring, abrasion and wear of the uppertail-coverts shortens these feathers from the tip, and as the dark pigmentation is less susceptible to wear, this often results in the dark markings ending up at the feather tip. Since



**352.** ‘Stejneger’s Stonechats’ *Saxicola maurus stejnegeri*, Beidaihe, China, September 2013. These four individuals illustrate the two classes (1 and 2) used to describe the intensity of the dark uppertail-covert markings, and the two subclasses (A and B) used for describing the positioning of the markings (see text for further explanation).

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**353.** 'Stejneger's Stonechat' *Saxicola maurus stejnegeri*, Beidaihe, China, September 2013. Note the fully visible class 1 and 2 pattern on several of the post-juvenile uppertail-coverts, while the only remaining juvenile uppertail-covert (marked) lacks any darker pattern.

the longest uppertail-coverts rest on the underlying dark rectrices, these dark tips then seemingly 'vanish' into the background (see plate 351), so that they may be hard to see under field conditions.

### Are these birds really *stejnegeri*?

Working at a migration site has some obvious disadvantages. Most noticeably, we do not know the true origin of the birds that

were collected from two individuals with dark markings in the uppertail-coverts that were found dead. Mitochondrial DNA analysis by Martin Stervander at Lund University grouped these birds firmly within *stejnegeri*, with no or little differentiation from the numerous reference sequences available at GenBank (Stervander *et al.* in prep.). In other words, there is very strong support for birds at Beidaihe that show dark markings in the uppertail-coverts being genuine *stejnegeri*.

### Implications

The separation of nominate *maurus* and *stejnegeri* is problematic in all plumages. The above-mentioned characters of spring males are subject to rather extensive variation (perhaps especially in *maurus*, in which the size of both the white neck patches and the rump regularly approach that of *stejnegeri*). The recognition of spring females and all birds in autumn is similarly difficult. Differences in ground colour (on average, darker and warmer in *stejnegeri*) are

Gabriel Norevik



**354.** 'Stejneger's Stonechat' *Saxicola maurus stejnegeri*, Beidaihe, China, October 2013, showing the most extreme pattern of dark spots on the uppertail-coverts found among more than 200 birds examined between August and November 2013.



discernible primarily when series are compared, and this character is less useful at an individual level. There is overlap in the measurements of bill width of *maurus* and *stejnegeri* and, when faced with a single vagrant individual under field conditions, this character is of rather low value and is at best indicative.

As far as we know, class 2 markings have never been observed in birds within the breeding range of nominate *maurus*, while darker feather shafts (weak class 1 pattern) are seen in a low proportion of *maurus* and the other Siberian Stonechat taxa. Consequently, any bird showing class 2 markings on the uppertail-coverts, especially if it also shows a rich, heavily saturated plumage and a sturdy bill, is a strong candidate for *stejnegeri*. Indeed, the first-year male in Finland in November 2013 fulfilled these prerequisites (plate 357). The plumage was rich and dark, and the bill appeared rather heavy (though, subsequently, measurements placed the bill in the overlap zone). Some of the photographs seem to show black class 2 markings in the uppertail-coverts, but unfortunately this is hard to establish beyond doubt (the ringer did not note such markings when handling the bird). However, all the available evidence



Magnus Hellström

**355.** Adult (2CY+) male 'Stejneger's Stonechat' *Saxicola maurus stejnegeri*, Beidaihe, China, October 2012. Note the partly visible class 2 marking on the left uppertail-covert, placing this bird outside the currently known variation of nominate *maurus*.

seemed to suggest that this individual was a potential *stejnegeri* – and that was subsequently confirmed by DNA analysis (Stervander *et al.* in prep.).

In all plumages, *stejnegeri* showing class 2 markings in the uppertail-coverts may (in theory) be mistaken for a European Stonechat. However, few *stejnegeri* appear to show the widespread, medium-sized and regularly dis-



Fredrik Friberg

**356.** Adult (2CY+) Siberian Stonechat *Saxicola m. maurus* (identification based on range), Zhabagly, Kazakhstan, October 2012. There is considerable variation in the colour of the underparts of fresh birds, and warmer birds like this are sometimes seen within the range of *maurus*.

Jani Vastamäki



**357.** First-winter male 'Stejneger's Stonechat' *Saxicola maurus stejneri*, Orivesi, Pappilanniemi, Finland, November 2013. The dark and saturated plumage combined with a seemingly strong bill created an overall impression that raised suspicions of 'Stejneger's Stonechat'. When examined closely, the longer uppertail-coverts appear to show class 2 markings, but it is difficult (other photos of the bird fail to clarify this) to exclude the possibility that this is a false pattern created by the spread tips of the coverts and the dark underlying rectrices. During the handling, no markings were noted by the ringer. The bird was subsequently proved to be 'Stejneger's Stonechat' from genetic analysis of a collected feather.

tributed dark spotting found in the uppertail-coverts of fresh European Stonechats (see plate 359). In difficult cases, observers should focus on other characteristics, such as the

axillaries and underwing-coverts (in *stejnegeri* black in adult males, and often partially black in young males; in European Stonechats medium to dark grey), and the state/pattern of the flanks (cleaner and fresher looking in *stejnegeri*; often with an untidy, greyish worn

Martin Stervander



**358.** Siberian Stonechat *Saxicola m. maurus*, Chokpak, Kazakhstan, September 2002. This young female shows typically clean uppertail-coverts with no dark pattern present. In *stejnegeri* examined at Beidaihe, this pattern (class 0) is present in c. 40 % of post-juvenile birds.



**359.** European Stonechat *Saxicola r. rubicola*, Israel, November 2008. A young male showing typical fresh *rubicola* pattern with medium-sized dark and regularly shaped markings, spread symmetrically across the uppertail-coverts.

Yosef Kiat

appearance and with some fine streaking in European Stonechat, at least in spring). These and other characters are described in detail in Hellström & Wærn (2011), although that reference focuses primarily on nominate *maurus*. Note also that the variation within *stejnegeri* is at present not fully understood and, for example, a few *stejnegeri* seem to show some irregular flank streaking. More research is required in order to establish the extent of this variation.

### The southern part of the intergradation zone

Vaurie (1959) and Stepanyan (1990) recognise a zone of intergradation between *stejnegeri* and nominate *maurus* extending from the lower Yenisey River southeast to the Irkutsk area, situated west of the southern part of Lake Baikal. In this region, both Stepanyan and Vaurie reported birds with intermediate characters, but unfortunately neither author described the frequency or the morphology of these birds in detail. Field observations during the breeding season by MH in Irkutsk, and in an area to the west, the Tunka Valley and the eastern Sayan Mountains, have revealed no birds with dark markings in the uppertail-coverts; indeed, the birds present in this area are generally very similar to nominate *maurus* occurring farther west in Siberia. Interestingly, Siberian Stonechats are more or less absent from the area just south and east of southern Lake Baikal, including the Selenga Delta, which contains vast areas of seemingly optimal habitat (Igor Fefelov *in litt.*, pers. obs.). The transition from *maurus* to *stejnegeri* in southern Siberia may perhaps be more abrupt (and with a lower frequency of hybridisation) than implied in the literature.

### Conclusions

Our findings suggest that the uppertail-covert pattern may be an important addi-



**Fig. 1.** The approximate distribution of Siberian Stonechat *Saxicola maurus* showing the breeding ranges of *S. m. maurus* (pale blue) and *S. m. stejnegeri* (brown) in southern Siberia according to Vaurie (1959) and Stepanyan (1990). However, in the yellow-hatched area, the species is largely absent, despite large areas of apparently suitable breeding habitat.

tional character for the separation of nominate *maurus* and *stejnegeri* in the case of many, although not all, birds. In the field, when faced with a fresh-plumaged potential *stejnegeri* in autumn, this character will be more useful in males (in which the uppertail-coverts often show bolder dark marks towards the feather tip) than in females. In the hand, the uppertail-coverts should be examined thoroughly by carefully lifting/separating the feathers to evaluate the pattern. The presence of class 2 markings is likely to mean that a bird is *stejnegeri* rather than *maurus*, but class 0- and class 1-type patterns can be found in both races.

### Acknowledgments

We thank Yang Jinguang, warden at Beidaihe Bird Observatory, China, as well as Marcus Danielsson, Lina Jansson and Bo Petersson, who all served as ringers in Beidaihe during autumn 2013. Our thanks also go to Martin Stervander for support with genetic analysis of the specimens, to Igor Fefelov for translating Russian publications and for his insight on the subject, and to Mats Wærn for useful and productive comments. The Swedish–Chinese Bird Banding Exchange Project, which has now been completed, was a co-operation between the Bird Ringing Centre at the Swedish Museum of Natural History (Stockholm) and the National Bird Banding Centre (Beijing), financially supported by the Swedish International Development Cooperation Agency (SIDA), and with the Swedish bird observatories at Ottenby and Falsterbo as co-operative partners. Bo Petersson (bo@bingsmarken.se) was the project leader at Beidaihe Bird Observatory. This is contribution no. 282 from Ottenby Bird Observatory.



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Correction

In the recent paper on the Important Bird Areas of the Falkland Islands (*Brit. Birds* 107: 314–338), some errors were inadvertently introduced to table 3, on p. 322. Rather than print a list of corrections, we felt it would be simpler to reproduce the corrected table in full – below.

Sarah Crofts (*Falklands Conservation*) and Lincoln Fishpool (*BirdLife International*)

Table 3. Species for which Falkland Island IBAs are selected, the criteria they trigger and population estimates. If no recent census data are available, estimates are taken from Woods & Woods (1997).				
Species	IUCN status	IBA criteria	Estimated Falkland population (breeding pairs)	Most recent census
Falkland Steamer Duck <i>Tachyeres brachypterus</i>	LC	A2, A4i	9,000–16,000	
Ruddy-headed Goose <i>Chloephaga rubidiceps</i>	LC	A2, A4i	Unknown	
Gentoo Penguin <i>Pygoscelis papua</i>	NT	A1, A4ii	130,000	Baylis <i>et al.</i> in press
Southern Rockhopper Penguin <i>Eudyptes chrysocome</i>	VU	A1, A4ii	320,000	Baylis <i>et al.</i> 2013
Macaroni Penguin <i>Eudyptes chrysolophus</i>	VU	A1	<150	Huin 2007
Magellanic Penguin <i>Spheniscus magellanicus</i>	NT	A1	100,000?	
Black-browed Albatross <i>Thalassarche melanophris</i>	NT	A1, A4ii	500,000	www.birdlife.org
Southern Giant-petrel <i>Macronectes giganteus</i>	LC	A4ii	20,000	Reid & Huin 2008
Slender-billed Prion <i>Pachyptila belcheri</i>	LC	A4ii	2,000,000 New Island	Catry <i>et al.</i> 2003
White-chinned Petrel <i>Procellaria aequinoctialis</i>	VU	A1	55–100	Reid <i>et al.</i> 2007
Sooty Shearwater <i>Puffinus griseus</i>	NT	A1, A4ii	>10,000	
Imperial Shag <i>Leucocarbo atriceps</i>	LC	A4i	45,000–84,000	
Dolphin Gull <i>Leucophaeus scoresbii</i>	LC	A4i	3,000–6,000	
Striated Caracara <i>Phalacrocorax australis</i>	NT	A1, A2	600–700	Falklands Conservation, unpubl. from surveys in 2012/13
Blackish Cinclodes <i>Cinclodes a. antarcticus</i>	LC	A2	15,000–28,000	
Cobb's Wren <i>Troglodytes cobbi</i>	VU	A1, A2	6,000	Poncet 2011
White-bellied Finch <i>Melanodera melanodera</i>	LC	A2	7,000–14,000	

# Rarities Committee news

## BBRC seeks new member

BBRC is seeking to recruit a new member to join the Committee, to replace our longest-serving member, James Lidster, in December 2014. The key criteria for candidates include:

- a widely acknowledged expertise in identification;
- proven reliability in the field;
- a track record of high-quality submissions of scarce and rare birds to county records committees and BBRC;
- experience of record assessment;
- the capacity to work quickly and efficiently, and an ability to handle the volume of work involved in assessing 700+ records per year;
- easy access to and knowledge of IT;
- regional credibility.

BBRC's nominee is **Micky Maher**. Micky lives in Lynclys, Shropshire, from where he works as an Ecological Consultant and tour guide. Before this he spent 20 years working in conservation, mainly in Shetland and Northumberland. Micky has birded in most counties in Britain, but in particular in his home county of Northumberland and in Shetland. He has an interest in many aspects of birding, but the thrill of migration and finding rare birds is his primary focus. He has amassed an enviable list of rarity finds including two Pallid Harriers *Circus macrourus*, Upland *Bartramia longicauda*, Stilt *Calidris himantopus* and Terek Sandpipers *Xenus cinereus*, Greater Yellowlegs *Tringa melanoleuca*, Gyr Falcon *Falco rusticolus*, Arctic *Phylloscopus borealis*, Hume's *P. humei*, Pallas's Grasshopper *Locustella certhiola*, Lanceolated *L. lanceolata*, Savi's *L. luscinioides*,

Booted *Iduna calligata*, Sykes's *I. rama*, Paddyfield *Acrocephalus agricola*, Blyth's Reed *A. dumetorum* and Great Reed Warblers *A. arundinaceus*, White's *Zoothera dauma* and Swainson's Thrushes *Catharus ustulatus*, Pine *Emberiza leucocephalos* and Yellow-breasted Buntings *E. aureola* (!). He has travelled extensively abroad, was Shetland's County Recorder from 2002 to 2007 and served on the Shetland Birds Records Committee. He was also a contributing author for the recent *Birds of Scotland* avifauna.

While Micky enjoys the support of BBRC, we welcome any alternative nominees. The nominee's name should be sent to the BBRC Chairman before 30th November 2014, with details of a proposer and seconder, and the written agreement of the nominee. After this date, a voting slip and list of candidates, with relevant details, will be sent to all County Recorders and bird-observatory wardens, if necessary.

The successful candidate will replace James, who has been a member since 2005. James has brought a thorough knowledge of bird identification, gained from his extensive travels, alongside constant good humour, to his full-term on the committee. He authored the paper on the tricky Booted Warbler at Green Farm, Scilly (*Brit. Birds* 102: 617–621), and helped to set up our @\_BBRC Twitter account. We are grateful that he has very kindly offered to continue assisting with aspects of our work after his retirement.

For more information, contact Adam Rowlands at the address below.



# BBRC

British Birds Rarities Committee



### BBRC is sponsored by Carl Zeiss Ltd

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## The continuing relevance of *Silent Spring*

Recently, Conor Jameson suggested that we remember Rachel Carson annually on the anniversary of her death (*Brit. Birds* 107: 242). I would go further and suggest that we never forget the issues to which she alerted the world – and their continuing relevance.

Carson's message in *Silent Spring* applied to the misuse of all pesticides but she concentrated on DDT because it was then widely used in the USA, and because it was promoted worldwide for the control of arthropods in many environments. She reviewed facts that were already well established but which the pesticide industry had largely hidden from the public: some of the organochlorine pesticides were dangerous to human health (though DDT is less dangerous than others); DDT and other organochlorines build up in food chains, so are especially dangerous for animals high in food chains (such as humans); and many insects were already resistant to DDT, so in many situations it was not working. She showed both that the industry had spread disinformation and that public officials had accepted industry claims uncritically.

The pesticides industry in America spent the equivalent of 1.5 million dollars trying to discredit the book. It was implied that Carson was seeking to ban pesticides that were safe if used properly – but she was not seeking a ban, merely more selective use to achieve pest-control objectives more efficaciously, with fewer health and environmental side effects (though, of course, with the side effect for the industry that less pesticide would be used – the real reason for the attacks on the book). Even before the book was published, the manufacturers threatened to sue the publishers on the grounds that it was inaccurate, an assertion often repeated by their spokesmen in reviews of the book. But Carson had already had everything checked by experts and none of her critics found a single specific inaccuracy.

The attacks descended into silliness: the book was dismissed as alarmist and emotional; it would appeal to 'food faddists, organic gardeners, anti-fluoride campaigners,

pseudoscientists and nudists'; Carson was a hysterical bird-lover, cat-lover, or fish-lover with no scientific credentials. This all backfired for, in truth, Carson was a qualified biologist with a distinguished career behind her. The seriousness of her approach was apparent when she appeared before a congressional committee, as it was to all those who were stimulated to read the book by the furore that the industry whipped up. In an allegation that was not only irrelevant to whether her science was correct but also quite without foundation, they accused her of being a communist, a serious allegation in America at that time. Her response was simple: 'Let the course of events provide the answers.' The campaigning against the book gave it great publicity; millions read it and were convinced.

This should have been the end of the matter but in recent years there have been new attacks on Carson, claiming that she caused DDT to be banned, resulting in billions of deaths from malaria. This claim could not be more untrue. What in fact happened is that the widespread blanket spraying of DDT was not only rather ineffective in the fight against malaria (which demands more refined and selective methods) but was actually causing mosquitoes to become resistant, so making it useless even when used properly. It was for this reason that the Stockholm Convention of 2001 delivered a worldwide ban on DDT *except for its use in the control of malaria*. Why this campaign of lies against Carson? It appears to me that it fits in with continuous attempts by some pressure groups to undermine science generally. Their problem is that science has produced evidence of the effects not just of pesticides on the environment and health but, for example, of smoking on health, of CFCs on the ozone layer, and of the burning of fossil fuels on our climate. This has been inconvenient to those who want to minimise regulations in order to maximise profits. They have conducted vigorous, often underhand, campaigns over many years, not just on specific issues but to undermine science generally in the eyes of the public and decision-



makers (see Oreskes & Conway 2010).

It would be wrong were scientists to determine policy. That is the job of politicians. But if political decisions are to be sound, then the scientific evidence should not be ignored or perverted. Policies will be ineffective if they rest on pretences such as that misused pesticides do not endanger us and our environment, or that man-made climate change is not happening, or that there is no evidence that neonicotinoids

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## Geese in thunderstorms

The recent report of Pink-footed Geese *Anser brachyrhynchus* being struck by lightning (Hurst & Bloomfield 2014) may be relatively uncommon but there are copious reports in the literature of birds, of a wide range of species, being killed in violent thunderstorms, usually by large hailstones or lightning strikes (e.g. Elkins & Goater 1991, Elkins 2004). Such destructive thunderstorms are most frequent in continental interiors, but severe thunderstorms elsewhere can also embrace hail, squalls, severe turbulence and tornadoes.

The injuries sustained by some of the dead geese in Norfolk suggest an encounter with a tornado. Several tornadoes were experienced across England on 25th January 2014, associated with the passage of a squall line in the afternoon, which brought thunderstorms, violent winds and intense rain. In a similar winter storm on 3rd January 1978, to which Hurst & Bloomfield also refer, Meaden (1978) identified as many as 14 tornadoes in eastern England. The goose mortality in the 1978 event was described by Meaden (1978–79), the injuries being similar to those seen in 2014. Although it may not always be easy to identify the causes of death of birds caught up in a storm, the impacts of several phenomena within the thunderstorms were revealed by autopsies after the earlier event. On some birds, lightning strikes left scorch marks, while ruptured livers and lung haemorrhage in other, unmarked, individuals probably resulted from rapid pressure changes associated with powerful air currents in one or more rotating tornadic vortices. It is also possible

may be implicated in the decline of bee populations or, to take an example of the opposite hue, that genetic modification produces ‘Frankenstein foods’. Rachel Carson’s best legacy would be that we never forget the need for policies to rest on sound evidence.

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for the shock wave from a lightning strike to cause internal injuries, but on unmarked birds the tornado effect is more plausible. It is unlikely that gaining altitude would help the birds to escape the effects of a storm – not only would this take them into lower atmospheric pressure, but the vertical extent of thunderclouds can be 10 km or more.

In the UK, there are on average 47 tornadoes a year, 17% of which are in winter (Kirk 2014). Additionally, many remain unreported, while incipient tornadoes can often be observed as funnel clouds. Unlike tornadoes, these do not reach the ground, but may nevertheless be of sufficient danger to birds. Presumably, visible vortices can be avoided by birds in flight, but not necessarily in the associated gusty winds, heavy rain and poor visibility.

Elkins & Goater (1991) suggested that, since geese are sensitive to disturbance, they take flight readily when hearing thunder, which renders them vulnerable to the effects of severe weather described above.

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## Little Egret mortality in gale

The first recorded breeding of Little Egrets *Egretta garzetta* in North Wales was in 2002, when at least one pair bred on a small island in the Menai Strait. Numbers increased and, by 2006, the birds had moved to breed on an estate to the east of Bangor, alongside the Menai Strait. Since 2009 there have been an estimated 40+ pairs nesting here in most years, with probably 60+ pairs in 2010, though an accurate count of nests is very difficult at this site. In 2012, the colony split into two parts, one at the old site and one about 1 km farther west. This remained the pattern in 2013. Many, though not all, of the chicks from this colony have been colour-ringed. Large numbers of birds roost nearby at Aber Ogwen in late summer and early autumn, with 156 counted there in August 2013. By late autumn, the numbers in this area are much smaller, usually 25–35 birds.

During the winter of 2013/14, northwest Wales experienced an unusual number of gales. On 5th December 2013, gale-force winds built up in the late morning and early afternoon, when gusts of up to 123 km/h were recorded at Capel Curig (Caernarfon-

shire). Following this gale, the estate forester found a large number of dead Little Egrets in an area of spruce *Picea* trees alongside the Menai Strait. These were trees that had been used for nesting by the eastern half of the colony. Some of the corpses were still entangled in the branches of the trees in which they had been roosting, while others lay on the ground nearby. These were still visible when DVE visited this site a month later. It was estimated that there were 18–22 dead birds, and those which could be examined did not have colour rings. The colony was counted in May 2014, and was estimated to hold 25–35 nests in the western half. The eastern half of the colony, where the dead birds had been found, had apparently been abandoned.

The winter gales probably caused substantial mortality among seabirds, with more tideline corpses than usual noted. However, mortality on this scale among other groups of birds following gales seems to be unusual. This raises the question of whether Little Egrets are particularly susceptible to gales.

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## Large prey species taken by Peregrine Falcons breeding in Devon

As part of a study of Peregrine Falcon *Falco peregrinus* diet and foraging behaviour at coastal territories in south Devon, over 300 prey samples have been recorded and analysed since April 2012. Prey remains were collected weekly from four coastal territories and analysed subsequently, with reference to Brown *et al.* (2003), and with assistance from Edward Drewitt.

The discovery of a small pile of plucked Shag *Phalacrocorax aristotelis* feathers at one territory in November 2012 provides the first published evidence of a Peregrine successfully taking this species in the UK. This sample was retrieved from a broad, sloping grass peninsula, which terminates in a

vertical cliff. This area was used regularly as a feeding area by the resident Peregrines, with 52% (n=140) of all prey items recorded for this territory being found at various points on the peninsula. The Shag feathers were in a small pile and separated individually, characteristic of how Peregrines pluck their prey. The quills of all the feathers except one were cut square at their ends, a characteristic feeding sign of a mammal. However, the feathers were not bitten off in clumps but had been pulled out individually: a diagnostic difference between the feeding habits of carnivorous mammals and raptors (Bang & Dahlstrom 2011). This area was also visited by a Red Fox *Vulpes vulpes*, as three kills,

including this one, showed evidence of scavenging by a mammalian predator. Fresh Fox droppings were found on two occasions during January–March 2013 next to pluck sites on the grass peninsula, and a Red Fox was observed in the area in February 2013. It is most likely that this animal was scavenging during the leaner months of winter. The resident Shags in the area roost on inaccessible islands offshore and the likelihood of Fox predation in this situation is small.

Two other large prey species were also taken at this site between October 2012 and August 2013: Herring Gull *Larus argentatus* made up 2.9% of remains by frequency and 10.5% by biomass, and Lesser Black-backed Gull *L. fuscus* 2.9% by frequency and 9.2% by biomass respectively (n=140).

Several other dietary studies in the UK have recorded Peregrines taking large prey items such as Barnacle *Branta leucopsis* and Brent Geese *B. bernicla*, Common Shelduck *Tadorna tadorna*, Mallard *Anas platyrhynchos* and Great Black-backed Gull *L. marinus* (Ratcliffe 1993; Dixon 2005; Drewitt & Dixon 2008). Some of these approach the weight of a Shag, for example the mean weight of both Barnacle Goose and Great Black-backed Gull is 1,700 g, compared with Shag 1,900 g and female Peregrine 1,100 g (all weights from [www.bto.org](http://www.bto.org)).

The two other prey species that had evidence of post-predation scavenging at this site were Little Grebe *Tachybaptus ruficollis* and Lesser Black-backed Gull. In the case of the former, it seems highly unlikely that a Fox

would predate this species within the habitat where its remains were found. The records of other large prey species, such as gulls, from the same study site suggest that one or both members of the pair of Peregrines in this territory were accustomed to taking prey items equal to or larger than their own body weight. Breeding pairs of Peregrines are known to hunt co-operatively (Dekker & Taylor 2005), so it is conceivable that larger species are being killed by a combination of attacks from both adults, although there is no direct evidence for this.

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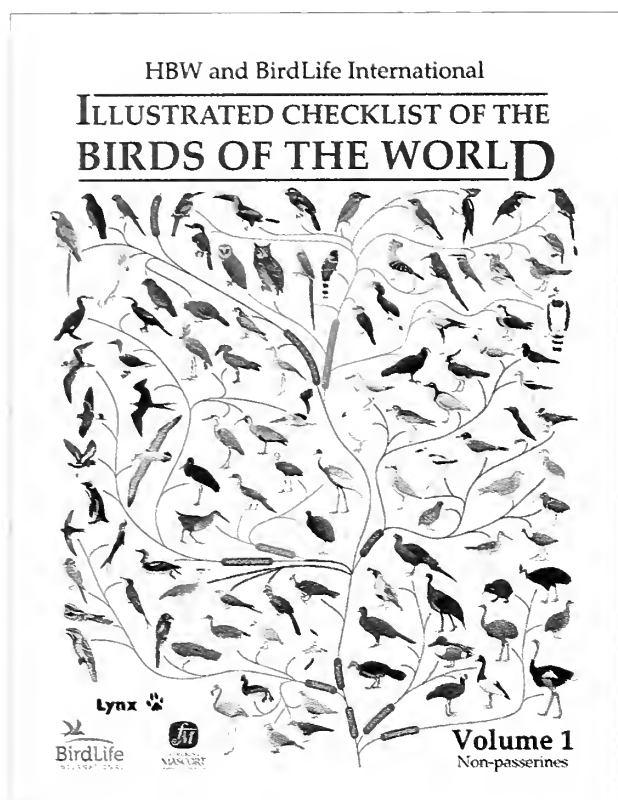
## Obituary: Michael Gallagher (1923–2014)

Major Michael Gallagher was a small, modest, agreeable soldier with a varied military experience around the world during World War II and until his retirement in 1976. He first attracted ornithological attention when he organised the study of the birds of the Pacific Christmas Island during the nuclear tests in the late 1950s. During subsequent postings to southern Arabia he encouraged and carried out various investigations on and off shore, and after retiring he returned there. He wrote

*The Birds of Oman* in 1980, which became the standard textbook, and became the founder and then director of the Oman Natural History Museum between 1981 and 1998. His activity in various branches of natural history there was such that he was awarded the Stamford Raffles award of the London Natural History Society in 1983 and an MBE in 1993.

*Bill Bourne*





Following the pattern established by the multi-volume *BWP*, the magnificent *Handbook of the Birds of the World (HBW)* completed its publication in 17 volumes, transferred into a digital format and is now moving on to a two-volume 'HBW Concise', in the form of a world checklist. The first volume (covering the non-passerines) has just appeared; the second, on the passerines, is due in 2016. The present book is the same size as an original *HBW* volume, mainly because it is the first world checklist also to illustrate and map every known species.

The *Checklist* is laid out in attractive double-page spreads with text on one side facing corresponding illustrations on the other. The text is extracted from the *HBW* species accounts, with appropriate revision. Each species header gives the scientific and English names, together with conservation status and a link to the relevant *HBW* volume and page. If taxonomy or nomenclature has altered since *HBW*, the earlier name is also given, a convenient signposting to these changes. The body of the account includes French, German, Spanish and significant alternative English names, taxonomic notes, and a list of recognised subspecies with their authors, dates and distribution. The taxonomic notes include the original scientific name applied to the taxon (omitted from many other regional or world checklists), its author, date and type locality, and further details on taxonomy and nomenclature.

## HBW and BirdLife International Illustrated Checklist of the Birds of the World.

### Volume 1. Non-Passeriformes

By Josep del Hoyo, Nigel J. Collar, David A. Christie, Andrew Elliott and Lincoln D. C. Fishpool

Lynx Edicions, 2014

Hbk, 904pp; many photographs, 357 colour plates, distribution and reference maps

ISBN 978-84-96553-94-1 Subbuteo code M24238

£151.00 BB Bookshop price £135.00

The listed species and the most distinctive subspecies are all illustrated, mainly with reduced images from *HBW*, among which 783 have been 'improved' and 242 have been added. For example, the herons on p. 405 include new illustrations of *Ardea cinerea monicae*, *A. purpurea bournei*, as well as *A. alba modesta*, *A. a. melanorhynchos* and *A. a. egretta*. Unfortunately, many of the white herons and egrets (and some other white birds) are grey and dull here but, those apart, the colour reproduction does not differ greatly from *HBW*. The *Checklist* is not intended to be an identification guide and the illustrated birds are all adults in breeding plumage, with females shown only when the sexes are noticeably different. There are no juveniles, non-breeding plumages or birds in flight apart from the swifts, petrels and a few others. The paintings are of a uniformly high standard and, while the smaller size has made them marginally less impressive than in *HBW*, the Kagu *Rhynchotus jubatus* on p. 155 has become quite exceptional. The plates include a scale bar, updated distribution maps for every species, and English as well as scientific names (only scientific names were given in *HBW*, leading to much page turning). There are 34 pages of reference maps and two appendices of extinct species (which would surely have been better in one).

More compromises will have to be made before a consensus over English bird names is achieved. The *Checklist* uses names based on *HBW* and BirdLife's own lists and most will be widely recognised. The latter has a stated preference for avoiding eponyms where possible although thankfully there are still many exceptions: for example, *Larus ichthyaetus* is called Pallas's Gull rather than



Great Black-headed Gull.

While the authority of the text, the quality of the plates and the revised distribution mapping for every species are more than enough to establish this as an exceptional volume, it is the authors' approach to species-level taxonomy that they believe is the most distinctive feature of the book. The number of recognised species is increasing year by year, in large part through the elevation of forms previously treated as subspecies following reassessment of characters, new information on vocalisations, distribution, ecology or DNA, and from the changing approaches used to delimit species. The process of re-evaluating candidate taxa has generally not kept up with the flood of new data and this has at times hindered effective conservation. In a major exercise, the authors have carried out a massive sweep using new criteria, adding a total of 462 species since *HBW*, about half of which were proposed by other authors after the publication of the relevant volumes. The criteria used here were published by Tobias *et al.* (*Ibis* 152: 724–746) and they are carefully explained in the introduction. The Tobias procedure is established on Biological Species Concept foundations but applies numerical scores to differences between taxa; a score of seven or more is taken to indicate separate species. Scores for biometric and vocal differences are derived from means and standard deviations and presented as Cohen's *d* statistic. Plumage differences are scored through a subjective four-point scale. Ecology, behaviour and distributional data are weighted differently. The authors illustrate their complicated procedure through numerous worked examples and the species texts include many of the scores for their newly elevated species.

The Tobias criteria were introduced originally because the authors found existing methods of delimiting species to be subjective and inconsistent. Creditably, they openly draw attention to areas where their own criteria have run into the sand. They quote an example, *Charadrius dealbatus*, where other researchers independently calculated Tobias scores. Out of 15 characters assessed by one or both teams, they examined five in common and the scores for only two of these agreed – hardly a ringing endorsement. They also concede that some similar taxa (e.g. *Larus argentatus*/*smithsonianus*, *Gallinago gallinago*/*delicata*, *Pterodroma feae*/*deserta*) failed to meet the threshold of seven, yet they accepted the splits. Similarly, *Hydrobates castro*/*H. montei* defeated their methodology. It is reported that *Caprimulgus*

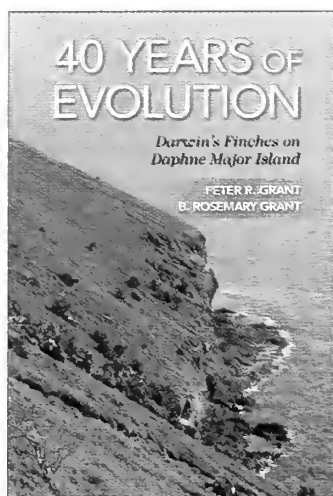
*meesi* is phenotypically indistinguishable from *C. macrurus schlegelii* (although the illustrations appear to show remarkably different birds), but the split is adopted on vocal criteria, which fall far short of their threshold. In the case of *Puffinus assimilis*/*P. lherminieri* and the albatrosses, they completely abandoned all attempts to apply their criteria and have simply followed published recommendations. The authors have certainly performed a great service in their review of species but, as illustrated by the above examples, it serves to highlight that no known system can definitively identify which taxa deserve to be treated as species. There are theoretical problems with the Tobias procedure (not discussed here) and I question whether its criteria and complexity produce better or more consistent results than other methods. It brings to mind the abandoned numerical taxonomy of the 1970s, and the Tobias scheme's failure to integrate DNA data reinforces a detachment from modern science.

Higher taxonomic levels are beautifully illustrated on the dust jacket but are not discussed, being drawn from an as yet unpublished book by Winkler *et al.* (*Bird Families of the World*). Genera have been revised from *HBW*, though I noticed, for example, that *Bonasa* and *Tetrastes* are treated under the former name despite abundant contrary evidence and one of their cited references stating explicitly that genetic data do not support monophyly of this grouping.

This is the second major world checklist to appear within the last 12 months, following *The Howard & Moore Complete Checklist of the Birds of the World*, 4th edn, Vol. 1, also to be completed with a passerine volume. The *HBW Checklist* contains 4,417 non-passerine species against *H&M's* 4,072. Both books are impressive, scholarly additions to the literature containing much original information but, regardless of the idiosyncratic species delimitation, this *HBW Checklist* is clearly in a class of its own. Having a full checklist of all the non-passerine species and subspecies, together with illustrations and maps in one remarkable volume, simply cannot be beaten. However, checklists go out of date quickly and it remains to be seen whether potential purchasers will prefer the hard copy or the regularly updated online *HBW Alive* (*Brit. Birds* 107: 490–491).

Alan Knox





## Forty Years of Evolution: Darwin's Finches on Daphne Major Island

By Peter R. Grant and B. Rosemary Grant

Princeton University Press, 2014

Hbk, 400pp; 44 colour photos and illustrations, 129 black-and-white illustrations

ISBN 978-0-691-16046-7 Subbuteo code M24276

£34.95 BB Bookshop price £31.45

Although he was more impressed with the diversity of giant tortoises among the Galapagos Islands, it is the finches with which Charles Darwin is most associated. There have been several studies of these birds: by Harry Swarth in the 1930s, David Lack in the 1940s and Robert Bowman in the early 1980s. But by far the most detailed investigations into their evolution and diversification has been made by the husband and wife team of Peter and Rosemary Grant. Much of their research was undertaken on the small island of Daphne Major, situated between the larger islands of Santa Cruz and Santiago. This island was chosen partly because it held only two species of finch – Medium Ground Finch (MGF) *Geospiza major* and Cactus Finch (CF) *G. scandens* – and the ecological differences and evolutionary divergence of these species might thus be easier to elucidate. Fortunately for the Grants (and for a generation of evolutionary biologists), the situation was complicated by droughts, exceptionally heavy rainfalls, colonisation of the island by the Large Ground Finch (LGF) *G. magnirostris* and the occasional presence of the Small Ground Finch (SGF) *G. fuliginosa*, which sometimes hybridised with MGF.

Forty years and 90 scientific publications later, a picture has emerged of how strongly the environment can modify the genetic structure of finch populations, and the critical role that hybridisation and competition can play in their evolution. This book is an overview of the results of these studies. To say that it is a summary would be insulting. It draws together the most important findings, setting them against a background of evolutionary, population, quantitative and behavioural genetics, with a smattering of molecular ecology thrown in for good measure. It is not a gentle read, but the Grants make every effort to explain the scientific background to their discoveries.

They started by colour-ringing almost all of the finches on the island (taking the usual biometrics)

and finding nests, which allowed parent-offspring analysis to reveal a high heritability of these body traits. They confirmed that beak morphology is important in determining the speed and efficiency with which MGF can manipulate seeds of varying size and hardness. The absence of other ground-feeding finches meant that MGF was somewhat smaller than on larger islands (where it co-existed with SGF), and so on Daphne it could utilise smaller seeds that elsewhere were the preferred food of its congener.

A drought came, caused by La Niña, and the seed crop failed: in particular the smaller seeds of grasses and annual herbs. The deep-rooted trees and cacti were less affected by the drought and continued to produce their larger, harder seed – albeit at lower quantities than normal. Larger-billed individuals within the MGF population were able to utilise this resource better than the smaller individuals. A larger proportion of the smaller birds died, and the Grants actually found the bodies of many of those that perished. The following year, the rains returned and so did the seeds. However, the genetic structure of the population had been changed and the larger size of the survivors was passed on to their progeny. Evolution by natural selection!

Subsequently, the MGF morphology reverted to the pre-drought position; the reappearance of the smaller seeds gave an advantage back to the smaller-billed birds. However, when an El Niño followed, the rains were heavy and the grasses and herbs produced exceptionally large crops. Furthermore, many of the bushes and cacti became overgrown with vines so that they produced fewer of the larger seeds that the bigger birds utilised. The situation was thus reversed and the smaller birds survived better. To add to the excitement, there was a tiny population of SGF on the island. Typically, when these were unable to find a conspecific, they hybridised with MGF, and the progeny were physically smaller than most of the MGF population. Normally, these smaller hybrids were out-competed by their larger congeners and their

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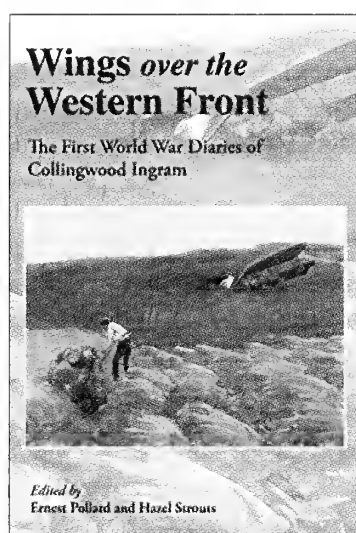
survival was correspondingly low. However, during the El Niño, the hybrids were equally (or even more) efficient at processing the plentiful supply of grass and herb seeds and survived as well as (or even better than) their MGF cousins. Natural selection in the reverse direction!

It has long been known that small, isolated populations are subject to close inbreeding, which can lead to the loss of genetic variability and the potential for inbreeding depression. Although there was evidence of this in the finches, the admixture of genetic material through hybridisation with SGF resulted in an increase in heterozygosity of MGF. But equally importantly, the SGF were largely wandering individuals from adjacent islands and by hybridising successfully they injected novel genetic variation into the MGF population. Not only did this reinforce the 'small bill genes' on the island, but it also introduced other allelic variation, which might explain why inbreeding depression was less marked than might have been expected. Another event was the

establishment of a small population of LGF. These birds were superior to MGF in their ability to process large, hard seeds. The larger MGF were outcompeted and gradually their bill size decreased.

There is so much more. The importance of vocalisations in species recognition. The significance of hybridisation to species formation. The evolution of isolating mechanisms and character displacement. The theoretical implications of their findings take up the final chapters. At a parochial level, the relevance of the Grants' research to the evolution of diversity among crossbills *Loxia* is so obvious. This is a quite remarkable book. I wish it had been around when I was teaching evolutionary biology at Nottingham University. As I said at the outset, in places it may be a difficult read, but it is one of the most important books that I have been privileged to read for *BB*. Book of the Year? To my mind, absolutely.

David Parkin



## Wings over the Western Front: the First World War diaries of Collingwood Ingram

By Ernest Pollard and Hazel Strouts

Day Books, 2014

Pbk, 302pp; black-and-white photographs

ISBN 978-0-9532213-9-4 Subbuteo code M24341

£10.00 *BB* Bookshop price £9.00

Collingwood Ingram lived from 1880 to 1981, and is perhaps best remembered as a horticulturalist (he

was popularly known as 'Cherry' Ingram), but he was also an ornithologist, perhaps best known for his book *Birds of the Riviera* (Witherby 1926). Although he was a contributor to *British Birds*, he published most of his notes in *Ibis*. At the time of his death he was the longest-serving member of the BOU, having still attended meetings of the BOC at the age of 93.

His diaries were given to Ernest Pollard (married to Ingrams' granddaughter), who joined forces with wartime specialist Hazel Strouts to publish the bird content of these fascinating war diaries. We discover that during the First World War, Collingwood Ingram served initially in the home defences around Kent before joining the Royal Flying Corps as a Compass Officer. It was in this role that he arrived in northern France in

December 1916, shortly after the Battle of the Somme had ended. He spent much of his time in the area around St Omer, about 30 km east of Calais, from where he travelled regularly between various military locations in northern France and Belgium, and always tried to record the birds that he saw. Despite the misery of war, he was able to move around with enough freedom to enjoy bird-watching in the rural areas of this flat landscape until the war ended late in 1918. Entries are given for most months, providing a feel for both the changing seasons and the extremes that weather can bring.

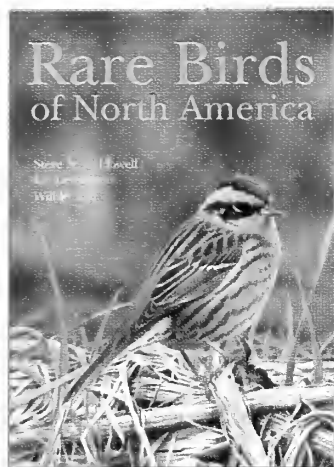
Collingwood Ingram was an astute observer of all that happened around him. These diaries, liberally illustrated with his sketches, mainly of birds, though sadly reproduced at a small scale, bring to life the daily challenges of wartime life contrasted against a backdrop of nature just carrying on as usual.

Keith Betton

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## Rare Birds of North America

By Steve Howell, Ian Lewington and Will Russell

Princeton University Press, 2014

Hbk, 428pp; numerous colour illustrations

ISBN 978-0-691-11796-6 Subbuteo code M21766

£24.95 BB Bookshop price £22.45

A bird book restricted to a (relatively small) selection of 'rare' birds of a given country is a strange beast; it will by its very nature have a limited appeal. Like the European version, *A Field Guide to the Rare Birds of Britain and Europe*, by Per Alström and Peter Colston but also illustrated by Ian Lewington (to which this book will inevitably be compared), it deals with a number of species that occur commonly elsewhere, but which in North America are extralimital. However, since the number of species (262 in total) is relatively low, I doubt that in many other publications they have been treated quite so thoroughly. After all, few birds are scrutinised so carefully as 'rarities'.

Any book on rare birds needs parameters – what is 'rare'? There may well be a number of species just beyond a statistical line that are not in such a book. What's more, in a large region like North America, what is 'rare' on one side of the continent may not be on the other. Indeed, we have similar arguments in Britain, where Wilson's Storm-petrel *Oceanites oceanicus* occurs regularly off Scilly but is an extreme vagrant elsewhere. So a long introductory chapter to this book explains what is rare in a North American context. Further sections deal with when and where rare birds occur and where they are coming from, with many helpful maps and tables. These are extremely informative and well worth reading as they discuss vagrancy theories similar to those established in Britain and Europe. I especially enjoyed the discussions on drift, misorientation, overshooting, dispersal, association, disorientation and false vagrancy. Sections on topography, moult and ageing precede the individual species accounts, where non-passerines are followed by the near-passerines and passerines, sensibly divided into those from the 'Old World' and the 'New World'.

The individual species accounts are very detailed. After a summary of the number of records, the taxonomy section is as detailed as it needs to be – so it may be one line or several paragraphs (for example for Lesser Sand Plover *Charadrius mongolus*). The 'Distribution and

Status' section briefly lays out the worldwide distribution, then describes the North American occurrence pattern – sometimes breaking it down into east and west, or even individual states when records are restricted to one only. A 'Comments' section summarises the vagrancy pattern, and is followed by a (variably detailed) 'Field Identification' section. Sometimes a species not yet recorded in the region is also described (such as Radde's Warbler *Phylloscopus schwarzi* in the Dusky Warbler *P. fuscatus* account). This section will be used in conjunction with the plates, which at times are helpfully annotated (Willow Warbler/Common Chiffchaff *P. trochilus/collybita* or Citrine/'Eastern Yellow Wagtails' *Motacilla citreola/flava* ssp.), but sometimes are not.

The illustrations for each species are printed among the individual accounts and are quite simply superb. I have known Ian for a long time and have loved his work ever since he burst onto the scene, having won the BB Bird Illustrator of the Year award. Over the years, his style and technique has, incredibly, continued to improve (and is the envy of many – including me!), as has the shape and jizz of the species he paints. In *Rare Birds of North America* they are a *tour de force* and I cannot deny that on opening the book I first leafed through it slowly, taking in the fantastic paintings, soaking up the technical quality coupled with the super character contained within each image. It is hard to pick out favourites, but I love the pipits, buntings and warbler plates, while many of the wader plates are as good as they come.

In contrast to the European guide referred to above, the illustrations are within the text for each species, rather than on 'plates' comparing similar species; that was a surprise, and I am not sure I have quite come to terms with it yet. Occasionally, we have one page that does compare similar species, such as the Lesser Sand and Greater Sand Plovers *C. leschenaultii* but, for example, the Little *Emberiza pusilla* and Rustic Buntings *E. rustica* would have made one fine page of illustrations, as would some of the *Phylloscopus* and *Locustella* warblers, and the thrushes. In an ideal world, the book might have usefully incorporated more images of potential vagrants that need to be

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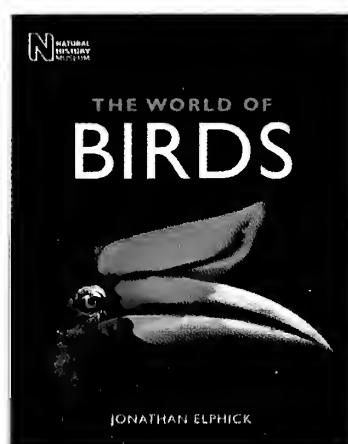


eliminated when identifying some of the species illustrated (for example, immature Red-backed *Lanius collurio* and Isabelline Shrikes *L. isabellinus* on the Brown Shrike *L. cristatus* plate). Perhaps I am just being greedy in wanting more of Ian's paintings, though I think they might have helped.

It was with great anticipation that I waited to receive this book. I had been aware of its existence

for a while, as I knew that Ian was working on the plates. But this book is more than just a showcase for Ian's work, it is a class act. The text is very well written, succinct and with the insight of great familiarity, and this book is a great addition to any birder's library.

*Brian Small*



## The World of Birds

By Jonathan Elphick

Natural History Museum, 2014

Hbk, 608pp; over 1,000 colour illustrations and diagrams

ISBN 978-0-565-09237-5 Subbuteo code M24177

£40.00 BB Bookshop price £35.00

Birds have exercised a fascination for scientists and lay people alike for centuries.

They have been observed, studied, admired and on occasions worshipped by humankind. They have inspired music, art and literature. And they have given rise to the most extraordinary range and flow of publications, which continue in spate. But wherever birdwatchers are on the spectrum from garden watchers through to professional ornithologists, they need at least two books on their shelves which they can turn to for reliable information: a decent field guide and a big book of general reference. Jonathan Elphick has now provided us with the best modern work in the latter genre. This is the definitive 'everything you ever wanted to know about birds' book. It covers not only questions you might have been afraid to ask, like which bird has the longest penis (it turns out to be the Lake Duck *Oxyura vittata* of southern South America), but also a host of others that may never even have occurred to you, like which species of birds have the fewest and largest numbers of feathers (the Ruby-throated Hummingbird *Archilochus colubris* and the Bewick's Swan *Cygnus columbianus*, respectively). But this volume is far more than an inventory of such facts, fascinating though many of them are. These are just thrown out like sparks from this dazzling account of what we now know about this most popular of animal classes.

The work is divided into two main parts. The first consists of a series of thematic chapters summarising for the general reader our current knowledge about almost every aspect of bird biology and behaviour – their evolution, anatomy, flight, diet, breeding and social behaviour, distribution,

habitats and migrations – and concluding with a chapter on the interactions between birds and people and the consequent (and increasingly urgent) conservation issues. This part is structured not as a dry encyclopedic treatment of separate A–Z entries, but as a continuous narrative, and one written with sensitivity and style.

The second part is a systematic survey of all the families of birds existing today (195 on Elphick's count, though, as he acknowledges, the precise number and their taxonomy are still controversial), with boxed panels listing the main features of each family. I know of no other single-volume source where all this basic information can be accessed so easily or is presented so attractively. You drop in with a specific query and then find yourself happily staying around to browse. The work is fully illustrated throughout with over 1,000 superb images, mainly commissioned from David Tipling, and supplemented with explanatory maps and diagrams prepared by the Natural History Museum of London, which has sponsored and published this work. Finally, there is an excellent reference section at the back with a glossary, a guide to further reading, lists of websites and detailed indexes of topics and species. It's the complete package. Two books in one.

As you would expect from this combination of author and publisher, the information is fully up to date and has been thoroughly researched and checked. I am chagrined to have so far found only one trivial mistake in this very large volume. The page design and layouts have been done with great care and imagination, and text and illustrations are generally very well integrated. But just occasionally one has the feeling that pictures have been introduced for purely ornamental reasons, leaving the

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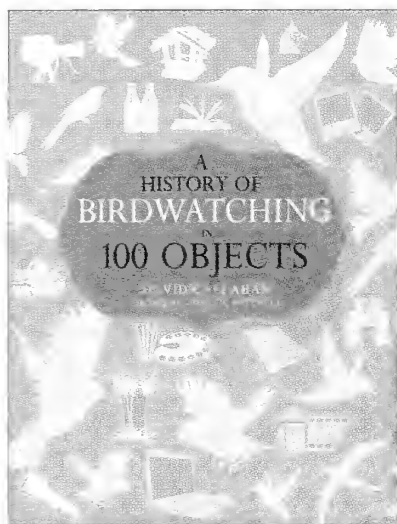


author with the task of then writing a relevant caption. In one or two cases too, the sizing of the illustrations seems inappropriate: one would ideally have liked larger images of the wonderful camouflage of the Double-banded Plover *Charadrius bicinctus* on a New Zealand shore (p. 79) and the massed Red Knot *Calidris canutus* at their high-tide roost (p. 137); on the other hand, the Red Grouse *Lagopus lagopus scoticus* (p. 143) perhaps gets a little more than his fair share of space, whatever one's views on Scottish independence.

Jonathan Elphick will already be well known to

readers of this journal as the author or co-author of such successful books as *The Birdwatcher's Handbook* (2nd edn 2001), *Birds: the art of ornithology* (2004, 2nd edn 2014), *The Atlas of Migration* (2007) and *Birdsong* (2012). He was also the principal researcher behind two other major compilations, *Birds Britannica* (2005) and *Birds and People* (2013). The present work weighs in at over 400,000 words and is wholly his own work, a summation of his long and distinguished career in ornithology.

Jeremy Mynott



## A History of Birdwatching in 100 Objects

By David Callahan

Bloomsbury, 2014

Hbk, 222pp; many colour illustrations

ISBN 978-1-4081-8618-3 Subbuteo code M21742

£20.00 BB Bookshop price £15.00

This book reflects the modern-day vogue for lists of things, a phenomenon driven in part by the frag-

mentation of life by multi-media and the internet, and editors' growing insistence on things in bite-sized chunks. By stealth our attention spans are eroding, and we are wilful participants in this process. Never mind the depth, feel the width!

For this contribution to the genre I'd recommend setting aside time on a train journey or an afternoon to enjoy the browse. You might, as I did, avoid the contents list and simply work through the 'exhibition'. I started with the last or most recent entry first, and worked backwards in time. You will discover an extremely diverting book, full of pleasant surprises, and expertly written. I liked that I reached the turn of the twentieth century with over 40 objects still to unearth.

I enjoyed too that you can lose yourself in the fantasy that birding has actually driven the evolution of our kind, that the peaks of human endeavour and the ultimate point of existence might revolve around our relationship with avi-fauna. In this state of mind I wouldn't have been

surprised to find such entries as 'the pencil', the 'internal combustion engine' and 'the eyeball' included along the way.

Inevitably, as author Callahan and editor Dominic Mitchell acknowledge, there are some inclusions and exclusions that may surprise – look out for the organisations that aren't here, for example – but that is inevitable, and all part of the fun of such finite lists. Eyebrows will be raised. Some manufacturers will be more pleased than others. I'd have been reassured by a disclaimer – 'no products were placed during the making of this history'. They say history is written by the winners. I think it's written by the writers.

In the end, *A History of Birdwatching in 100 Objects* is a great idea for a book. It is well executed and presented, exhibits are crisply photographed and captioned, and David Callahan writes with great knowledge and aplomb. I enjoyed it immensely and would recommend it to anyone wishing to know more about or merely reflect fondly upon the origins and rise of their hobby.

I look forward to the exhibition of the artefacts, if indeed there will be one.

Conor Jameson



# Recent reports

Compiled by Barry Nightingale and Harry Hussey

This summary of unchecked reports covers early August to October 2014.

**Headlines** The Northern Isles grabbed most of the attention during this extended review period, with up to four Pallid Harriers, Great Snipe, Red-eyed Vireo, Isabelline Shrike, Lanceolated Warbler, Swainson's, two White's and an Eyebrowed Thrush, Siberian Rubythroat, Red-flanked Bluetail, two Pechora Pipits and a Yellow-rumped Warbler. Ireland produced a good selection of seabirds including four Fea's-type Petrels, Macaronesian Shearwater (with another off Anglesey), two Swinhoe's and six Wilson's Storm-petrels, along with a possible Bulwer's Petrel plus a Stilt Sandpiper, three Red-eyed Vireos, Swainson's Thrush and Ovenbird. Those confined to mainland Britain were treated to an obliging Masked Shrike, two Little Crakes, a Franklin's Gull, Lesser Grey and Southern Grey Shrikes, two Pallas's Grasshopper Warblers, Siberian Stonechat and several Olive-backed Pipits. The highlights of the west-coast islands were Scarlet Tanager on Barra and Blyth's Pipit on St Mary's. The entire North Sea coast also enjoyed one of the best autumns for many years with outstanding numbers of Wrynecks, Barred Warblers, Pied Flycatchers, Whinchats and Red-breasted Flycatchers along with a good arrival of Greenish and Yellow-browed Warblers.

**Ross's Goose** *Anser rossii* Aberlady Bay (Lothian), 27th–29th September. **American Wigeon** *Anas americana* Loch Leven (Perth & Kinross), 23rd–28th September; Sanday (Orkney), 29th September to 2nd October; Inch Lake (Co. Donegal), 30th September–4th October. **Ferruginous Duck** *Aythya nyroca* Minsmere (Suffolk), 20th August to 7th September. **Lesser Scaup** *Aythya affinis* Blagdon Lake, 7th–17th August, same Chew Valley Lake (both Avon), 19th August to 3rd September, same Cardiff Bay Wetlands (East Glamorgan), 4th September to 5th October. **King Eider** *Somateria spectabilis* Yell (Shetland), 4th September and 27th September to 4th October; Burghead (Moray & Nairn), 26th September. **Surf Scoter** *Melanitta perspicillata* Up to three at Murcar/Blackdog (North-east Scotland), singles Co. Cork, Denbighshire, Fife, Co. Kerry and Highland.

**Zino's/Fea's Petrel** *Pterodroma madeiralfeae* Kilcummin Head (Co. Mayo), 10th August (presumed same off Annagh Head later that day), 13th and 17th August; Bridges of Ross (Co. Clare), 16th August; off Scilly, 18th August; off Baltimore (Co. Cork), two, 24th August; Flamborough Head (Yorkshire), 21st September, seen other sites to north off Yorkshire, Cleveland, Co. Durham and Northumberland later that day. **Bulwer's Petrel** *Bulweria bulwerii* Old Head of

Kinsale (Co. Cork), possible, 24th August. **Cory's Shearwater** *Calonectris borealis* Off Scilly, 48, 28th August. **Great Shearwater** *Puffinus gravis* Off Scilly, 300, 21st August. **Sooty Shearwater** *Puffinus griseus* On 21st September, 298 Flamborough Head, 158 Filey Brigg and 143 Long Nab (all Yorkshire), also 107 Whitburn (Co. Durham) and 313 Lewis (Outer Hebrides). **Manx Shearwater** *Puffinus puffinus* Porthgwarra (Cornwall), 20,000, 30th August and 15,000, 1st September. **Macaronesian Shearwater** *Puffinus baroli* 100 km WSW of the Skelligs (Co. Kerry), 21st September; Cemlyn Bay (Anglesey), 4th October. **Wilson's Storm-petrel** *Oceanites oceanicus* Bridges of Ross, 8th, 12th and 30th August; off Scilly, singles 9th and 10th



Richard Stonier

**360.** Wilson's Storm-petrel *Oceanites oceanicus*, off Scilly, August 2014.

August, three 12th, singles 13th, 14th and 21st August; 300 km west of Slyne Head (Co. Galway), 18th September; off Co. Kerry, 19th and 22nd September. **Swinhoe's Storm-petrel** *Oceanodroma monorhis* Bridges of Ross, 25th August; Kerry Head (Co. Kerry), 28th August.

**Night Heron** *Nycticorax nycticorax* Singles in Lancashire & N Merseyside, Leicestershire & Rutland and Worcestershire. **Cattle Egret** *Bubulcus ibis* Small influx, singles at Teifi Marshes (Ceredigion), Burton Mere Wetlands (Cheshire & Wirral), Hillsborough Park Lake (Co. Down), Connah's Quay (Flintshire), Beaulieu Estuary (Hampshire), Dungeness (Kent), Leighton Moss (Lancashire & N Merseyside), Welney (Norfolk), Middleton Lakes (Staffordshire), Pagham Harbour (Sussex) and Draycote Water (Warwickshire). **Purple Heron** *Ardea purpurea* Records from Devon, Norfolk, Somerset (up to two) and Suffolk. **Glossy Ibis** *Plegadis falcinellus* Records from Cambridgeshire, Cleveland, Co. Cork, Cornwall, Derbyshire, Co. Dublin, Essex, Greater London, Kent, Leicestershire & Rutland, Lincolnshire, Co. Louth, Northamptonshire, Nottinghamshire, Staffordshire, Co. Waterford, Co. Wexford and Yorkshire.

**Black Kite** *Milvus migrans* Records from Cornwall, Dorset, Essex, Kent (one or two), Co. Meath, Norfolk and Co. Wicklow. **Short-toed Eagle** *Circaetus gallicus* Grime's Graves (Norfolk), long-stayer, 19th July to 17th August. **Pallid Harrier** *Circus macrourus* Foul

(Shetland), 31st August, 17th and 19th September; Fair Isle, 8th–17th September; Easington (Yorkshire), 15th September; various locations, south Mainland Shetland, 17th–21st September; Tingwall (Shetland), 1st and 4th–5th October; various locations, north Norfolk coast, 18th–19th September; South Ronaldsay (Orkney), 19th and 29th September; Minsmere and Thorpeness (both Suffolk), 21st September.

**Little Crake** *Porzana parva* Black Hole Marsh (Devon), 4th–5th September; Minsmere, 4th–6th October.

**Black-winged Stilt** *Himantopus himantopus* Breeding pair with three juveniles, Pulborough Brooks to 9th August, then Sidlesham Ferry (both Sussex), 11th August; Cavenham (Suffolk), adult with four juveniles to 9th August, adult remaining to 12th; Keyhaven Marshes (Hampshire), 8th August; Doonbeg (Co. Clare), 23rd August; Ferrybridge (Dorset), two, 13th September. **American Golden Plover** *Pluvialis dominica* Records from Argyll, Co. Cork, Co. Donegal, Co. Durham, Co. Kerry (two), Co. Mayo, North-east Scotland, Orkney (three), Outer Hebrides (two) and Co. Wexford. **Pacific Golden Plover** *Pluvialis fulva* North Ronaldsay (Orkney), long-stayer to 11th August. **Broad-billed Sandpiper** *Calidris falcinellus* Pulborough Brooks, 25th–26th August. **Stilt Sandpiper** *Calidris himantopus* Cresswell Pond (Northumberland), long-stayer to 13th August; Tacumshin, 2nd–3rd September, then Lady's Island, 10th

September, Rosslare Back Strand (all Co. Wexford), 12th–13th September and Swords (Co. Dublin), 4th–7th September. **Baird's Sandpiper** *Calidris bairdii* Hale (Cheshire & Wirral), 28th August; Frampton Marsh (Lincolnshire), 10th September; Cross Lough (Co. Mayo), 26th–27th September; Lenadoon Point (Co. Sligo), 27th September. **White-rumped Sandpiper** *Calidris fuscicollis* Long-stayers Gibraltar Point (Lincolnshire), to 8th August; Hickling Broad (Norfolk), to 9th August. Also



**361.** Adult Franklin's Gull *Larus pipixcan*, Cley Marshes, Norfolk, August 2014.



Pilmore (Co. Cork), 17th August; Tiree (Argyll), 31st August; Lough Neagh (Co. Antrim), 16th–21st September; Blanket Nook (Co. Donegal), 21st September; South Uist (Outer Hebrides), 5th October. **Semipalmated Sandpiper** *Calidris pusilla* Keyhaven Marshes, 19th–20th September; Achill Island (Co. Mayo), 2nd October. **Terek Sandpiper** *Xenus cinereus* Kilnsea (Yorkshire), 7th August; Far Ings (Lincolnshire), 12th August; Swalecliffe (Kent), 16th August. **Lesser Yellowlegs** *Tringa flavipes* Croft Pascoe Pool (Cornwall), 29th August to 4th September; Normandy Marsh, 5th–9th September, then Titchfield Haven (both Hampshire), 11th–29th September; Blanket Nook, 6th–19th September; Derrinlough (Co. Offaly), two, 9th September; Skomer, 11th–12th September, and Marloes Mere (both Pembrokeshire), 15th–17th September; Rogerstown (Co. Dublin), 1st October; The Gearagh (Co. Cork), 2nd–5th October. **Marsh Sandpiper** *Tringa stagnatilis* Frampton-on-Severn (Gloucestershire), 28th–30th August. **Long-billed Dowitcher** *Limnodromus scolopaceus* Lough Boora (Co. Offaly), 18th–25th August. **Great Snipe** *Gallinago media* Foula, 24th–27th September. **Black-winged Pratincole** *Glareola nordmanni* Ouse Washes (Cambridgeshire), long-stayer to 9th August.

**Whiskered Tern** *Chlidonias hybrida* Tresco (Scilly), 13th September. **White-winged Black Tern** *Chlidonias leucopterus* Records from Avon, Cambridgeshire, Dorset, Co. Limerick, Lincolnshire and Suffolk. **Forster's Tern** *Sterna forsteri* Dundalk (Co. Louth) 14th–28th September. **Common Tern** *Sterna hirundo* Spurn (Yorkshire), 6,000, 28th August, then 10,360, 30th August. **Bonaparte's Gull** *Chroicocephalus philadelphia* Oare Marshes, long-stayer to 25th August, again 7th September; Cleadon, 21st August;

Whitburn (both Co. Durham), 11th–13th September; Dun Laoighaire (Co. Dublin), 16th September. **Little Gull** *Hydrocoloeus minutus* Mappleton, 2,200, 30th August; Flamborough Head, 7,824, 22nd September and 2,166, 5th October; Hornsea (all Yorkshire), 3,200, 24th September. **Laughing Gull** *Larus atricilla* Ballycotton (Co. Cork), long-stayer to 6th September. **Franklin's Gull** *Larus pipixcan* Cley (Norfolk), 13th and 15th–16th August; St John's Point (Co. Down), 20th September. **Mediterranean Gull** *Larus melanocephalus* Llanrhystud (Ceredigion), 566, 24th August.

**Snowy Owl** *Bubo scandiacus* Ben Macdui (Moray & Nairn), 25th June to 29th September; Loch nan Cuaran (Highland), 20th September. **Alpine Swift** *Apus melba* Kingsdown (Kent), 9th August. **European Bee-eater** *Merops apiaster* Wydcombe Estate, max. of four adults and nine fledged young on 23rd August, subsequently at Brading (both Isle of Wight), 12 birds, 12th and 16th September; Wadebridge (Cornwall), two, 30th August. **Red-footed Falcon** *Falco vespertinus* Elmley (Kent), 13th September. **Gyr Falcon** *Falco rusticolus* Lewis (Outer Hebrides), 4th October.

**Red-eyed Vireo** *Vireo olivaceus* Sumburgh (Shetland), 25th September; Loop Head (Co. Clare), 27th September; Firkeel (Co. Cork), 28th–29th September; Achill Island, 3rd October.



Graham Catley

**362.** First-winter Masked Shrike *Lanius nubicus*, Kilnsea, Yorkshire, September 2014.

**Isabelline Shrike** *Lanius isabellinus* North Ronaldsay, 15th–20th September. **Lesser Grey Shrike** *Lanius minor* Hollesley Marshes (Suffolk), 6th–7th September. **Southern Grey Shrike** *Lanius meridionalis* Burnham Norton (Norfolk), 5th–6th October. **Woodchat Shrike** *Lanius senator* Prestwick Carr (Northumberland), 1st September; Dawlish Warren (Devon), 8th September. **Masked Shrike** *Lanius nubicus* Kilnsea, 20th September to 2nd October.

**Short-toed Lark** *Calandrella brachydactyla* Records from Cornwall (two), Fair Isle (two), Co. Galway, Lincolnshire, Orkney, Pembrokeshire and Scilly.

**Barn Swallow** *Hirundo rustica* Spurn, 6,000, 29th August; Christchurch (Dorset), 6,500, 13th September. **House Martin** *Delichon urbicum* Christchurch, 14,000, 13th September; Hythe (Kent), 30,000 in one hour, 24th September.

**Greenish Warbler** *Phylloscopus trochiloides* About 26 during the period. After the first, in Shetland on 7th August, 12 arrived 26th–30th August and another six during 13th–19th September: nine in Norfolk, five in Shetland, 2–3 in Co. Durham, two each in Outer Hebrides, Suffolk and Yorkshire, singles in Caernarfon-

shire, Co. Cork, Northumberland and Scilly. **Arctic Warbler** *Phylloscopus borealis* Fair Isle, 22nd August, another 22nd September. In Shetland, Foula, 29th August and 3rd–5th September; Whalsay, 1st–3rd September; Hoswick, 20th September; Sandness, 21st–22nd September. Also Mizen Head (Co. Cork), 21st–22nd September; Church Cove (Cornwall), 30th September. **Yellow-browed Warbler** *Phylloscopus inornatus* Early and widespread influx from 10th September, maxima nine on Fair Isle on 15th September, 13 on North Ronaldsay on 16th September, and 11 on Bressay (Shetland) on 1st October. **Radde's Warbler** *Phylloscopus schwarzi* Sumburgh, 6th October. **Dusky Warbler** *Phylloscopus fuscatus* Wells Woods (Norfolk), 29th September. **Western Bonelli's Warbler** *Phylloscopus bonelli* Portland Bill (Dorset), 16th August; St Mary's (Scilly), 29th–30th August; Bardsey (Caernarfonshire), 31st August; Kelling (Norfolk), 7th and 10th September; Nanjizal (Cornwall), 15th September. **Western Bonelli's/Eastern Bonelli's Warbler** *Phylloscopus bonelli/orientalis* Aberdeen (North-east Scotland), 4th September; Cape Clear (Co. Cork), 10th September; Kenidjack (Cornwall), 19th–20th September. **Common Chiffchaff** *Phylloscopus collybita* Bardsey, 443, 19th September. **Blackcap** *Sylvia atricapilla* Seaford Head (Sussex), 300, 26th August. **Common White-**



Roger Riddington

**363.** White's Thrush *Zoothera dauma*, Durigarth, Shetland, October 2014.

throat *Sylvia communis* Seaford Head, 225, 14th August; Dungeness, 100, 21st August. Sub-alpine Warbler *Sylvia cantillans* Lundy (Devon), 18th August; Landguard (Suffolk), 29th August to 4th September; Unst (Shetland), two, 22nd–23rd September, one to 3rd October. Pallas's Grasshopper Warbler *Locustella certhiola* Titchfield



Ian Cowgill

**364.** Male Siberian Rubythroat *Calliope calliope*, Levenwick, Shetland, October 2014.

Haven (Hampshire), 6th September; Sea Palling (Norfolk), 19th September. Lanceolated Warbler *Locustella lanceolata* Fair Isle, 22nd September. Booted Warbler *Iduna caligata* Whalsay, 10th–15th August; Burray (Orkney), 30th August; St Agnes, 11th September; St Mary's (both Scilly), 20th September. Melodious Warbler *Hippolais polyglotta* About 12 in the period, most arriving between 16th August and 26th September, inc. 2–3 in Pembrokeshire, two each in Dorset, Outer Hebrides and Sussex, singles in Anglesey, Argyll, Kent and Scilly. Aquatic Warbler *Acrocephalus paludicola* Nanjizal, 9th September. Paddyfield Warbler *Acrocephalus agricola* Nanjizal, 31st August; Whalsay, 1st September; North Ronaldsay, 4th–10th September; Fair Isle, 5th September. Blyth's Reed Warbler *Acrocephalus dumetorum* Fair Isle, 14th August, another 16th August; Unst, 21st August; Foula, 25th August; Ythan Estuary (North-east Scotland), 30th August; Orfordness (Suffolk), 30th August; Bryher (Scilly), 2nd September; Fetlar (Shetland), 22nd September. Great Reed Warbler *Acrocephalus arundinaceus* Bressay, 20th September.

Rose-coloured Starling *Pastor roseus* About 26 in the period, nine arriving 19th–23rd September, with up to three in Co. Cork, Cornwall, Devon, Scilly and Shetland, singles in Dorset, Fair Isle, Co. Galway, Highland, Lincolnshire, Norfolk, Northumberland, Orkney, Pembrokeshire, Somerset and Sussex.

Swainson's Thrush *Catharus ustulatus* Unst, 28th September; Loop Head, 4th–5th October. White's Thrush *Zoothera dauma* Durigarth (Shetland), 29th September to 1st October; Fair Isle, 4th October. Eyebrowed Thrush *Turdus obscurus* North Ronaldsay, 30th September. Siberian Rubythroat *Calliope calliope* Levenwick (Shetland), 3rd–6th October. Red-flanked Bluetail *Tarsiger cyanurus* Sumburgh Head (Shetland), 19th September. Red-breasted Flycatcher *Ficedula parva* Widespread influx early to mid September, inc. five at Burnham Overy (Norfolk), 19th September and at least 13 in Shetland/Fair Isle that day. Pied Flycatcher *Ficedula hypoleuca* Large influx late August/early September, inc. 25 at Dungeness on 5th September. Whinchat *Saxicola rubetra* Large influx, peak 3rd–4th September, inc. 56 Spurn, 60 from Donna Nook to Grainthorpe Haven (Lincolnshire) and 35 Blakeney Point (Norfolk). Siberian Stonechat *Saxicola maurus* Holy Island (Northumberland), 19th–22nd September.

Yellow Wagtail *Motacilla flava* Dungeness, 110, 22nd August. Citrine Wagtail *Motacilla citreola* Ten in total, four arriving 27th–31st August: two each in Northumberland and Orkney, singles in Caernarfonshire, Co. Clare, Fife, Highland, Lothian and Shetland. Grey Wagtail *Motacilla cinerea* Spurn, 55, 19th September (record day count for Spurn). Blyth's Pipit *Anthus godlewskii*



James Lowen



**365.** Red-flanked Bluetail *Tarsiger cyanurus*, Sumburgh Head, Shetland, September 2014.

St Mary's, 5th–6th October. Tawny Pipit *Anthus campestris* St Margaret's-at-Cliffe (Kent), 30th–31st August; Portland Bill, 17th September. Olive-backed Pipit *Anthus hodgsoni* Gibraltar Point, 17th–20th September, North Ronaldsay, 18th–20th September; Wells Woods, 19th–22nd September; Kilnsea, 20th–21st September; Fair Isle, 21st–22nd September; Deerness (Orkney), 1st October; Sullom (Shetland), 3rd October. Pechora Pipit *Anthus gustavi* Unst, 22nd–25th

Roger Riddington



**366.** Yellow-rumped Warbler *Setophaga coronata*, Grutness, Shetland, September 2014.

September; North Ronaldsay, 30th September. Red-throated Pipit *Anthus cervinus* St David's (Pembrokeshire), 18th September; Gibraltar Point, 20th September; Fair Isle, 20th–24th September; Landguard, 23rd September; St Mary's, 30th September; Spurn, 4th October.

Arctic Redpoll *Acanthis hornemanni* Veensgarth (Shetland), 26th

September to 5th October. Scarlet Tanager *Piranga olivacea* Barra (Outer Hebrides), 6th October. Rustic Bunting *Emberiza rustica* Unst, long-stayer to 2nd October; Farne Islands (Northumberland), 15th–19th September; Filey (Yorkshire), 17th–18th September. Little Bunting *Emberiza pusilla* Perhaps unprecedented numbers in the Northern Isles, with at least ten on Shetland/Fair Isle on 19th September alone. Black-headed Bunting *Emberiza*

*melanocephala* Sumburgh, 4th September; Out Skerries (both Shetland), 29th September.

Ovenbird *Seiurus aurocapilla* Mizen Head, 27th September. Yellow-rumped Warbler *Setophaga coronata* Virkie, 29th September, then Grutness (both Shetland), 30th September to 1st October.



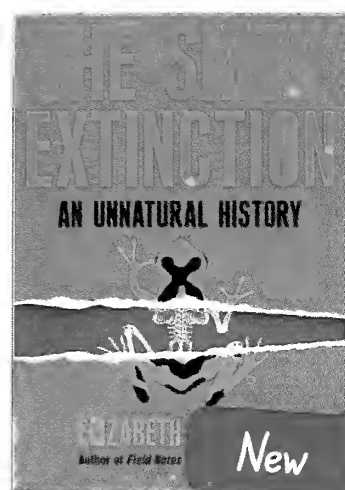


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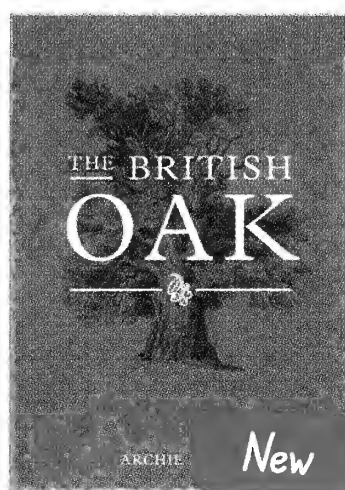
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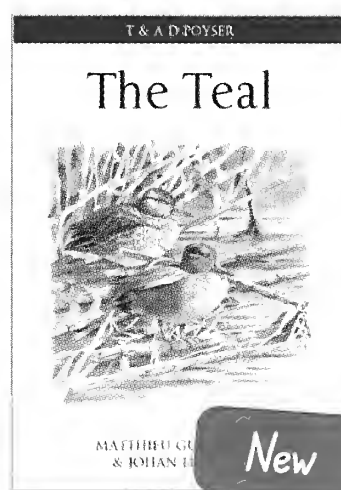
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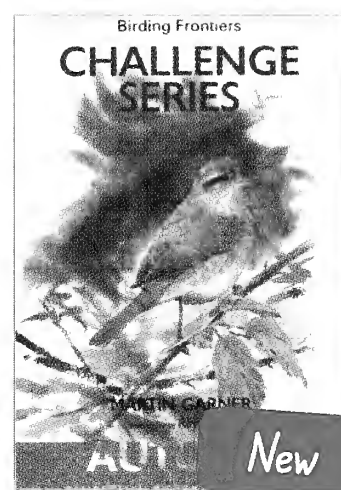
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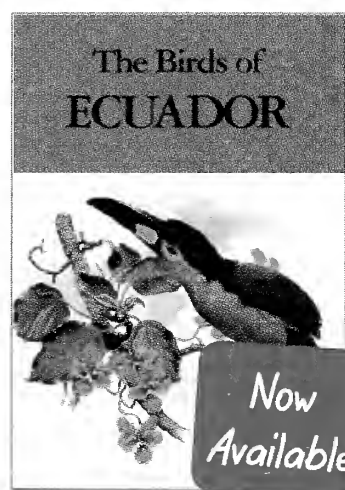
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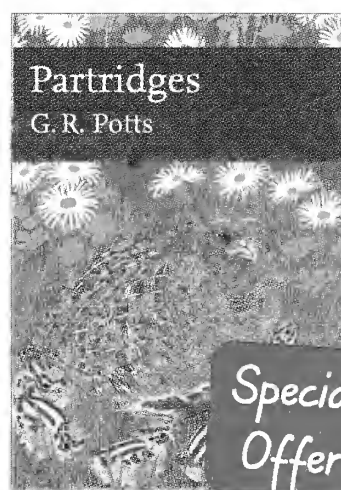
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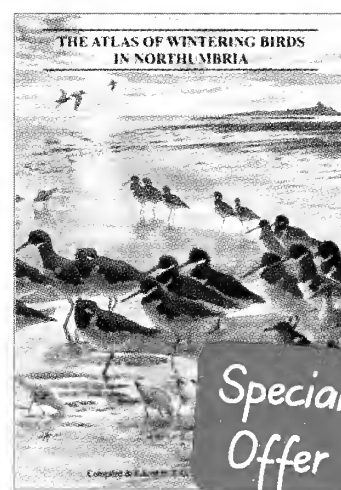
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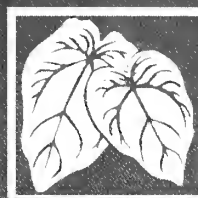
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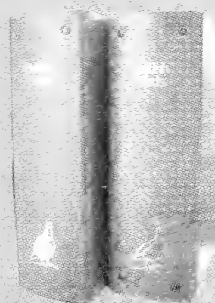
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